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Environmental Laboratory



**US Army Corps  
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*Dredging Operations and Environmental Research Program*

## **Soil Separation Mobile Treatment Plant Demonstration, Bayport Confined Disposal Facility, Green Bay, Wisconsin**

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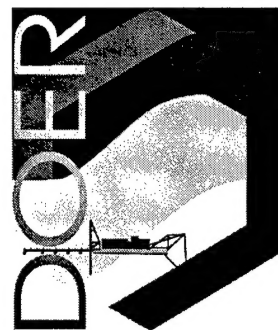
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Final report

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# Dredging: Innovative Technology

## *Soil Separation Mobile Treatment Plant Demonstration, Bayport Confined Disposal Facility, Green Bay, Wisconsin (ERDC/EL TR-02-38)*

**ISSUE:** Confined disposal facilities (CDFs) have historically been used for disposal of both clean and contaminated dredged material from navigational dredging projects. Many CDFs are nearing capacity. Removal of uncontaminated materials from the CDFs is a viable option for extending the life of these facilities. This approach carries the additional benefit of producing a marketable product for beneficial uses, which can potentially help to offset the cost of processing.

**RESEARCH:** The feasibility of physical separation as a volume reduction method has been demonstrated at several disposal facilities. A guidance document addressing principles of physical separation as they apply to soils and sediments, and identifying standard equipment, selection criteria, and potential sources was recently completed. Technical notes addressing recovery of materials from CDFs were also published under the Dredging Operations and Environmental Research (DOER) program. Work is ongoing at the U.S. Army Engineer Research and Development Center, funded under the DOER program, to develop bench-scale methods for economical preliminary feasibility evaluations.

**SUMMARY:** Preprocessing and separation equipment were tested in a one-day demonstration at Green Bay, WI. A 24-in. (0.6-m) maximum

density separator was used to separate sand from the bulk sediment. The target sand product specifications were less than 10 percent fines by mass and polychlorinated biphenyls (PCBs) concentrations less than 1 mg/kg. The underflow fraction averaged over 92 percent sand, as measured by a Coulter Counter. PCBs were reduced to 0.144 mg/kg PCB 1242 and 0.0119 mg/kg PCB 1260 in the sand, from 2.71 mg/kg and 0.145 mg/kg in the feed material, respectively. Based on statistical analysis of the results, the contaminant concentrations predicted for the sand fraction by the bench-scale testing were essentially equivalent to that achieved in the field operation. Distribution of metals was somewhat more variable than for PCBs, but metals were reduced by a factor of 2.6 to an order of magnitude in the sand fraction.

**AVAILABILITY OF REPORT:** The report is available in .pdf format on the World Wide Web at: <http://www.wes.army.mil/el/dots/doer/> and through Interlibrary Loan Service from the U.S. Army Engineer Research and Development Center (ERDC) Research Library, telephone (601) 634-2355, or the following Web site: <http://libweb.wes.army.mil/index.htm>.

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# Preface

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This report summarizes the evaluation of a special hydrocyclone configuration (the maximum density separator) for physical separation of sediments, and corresponding efforts to develop simplified, representative, bench-scale procedures for preliminary testing. This project was jointly funded by the U.S. Environmental Protection Agency Great Lakes National Program Office (GLNPO), GLNPO Identification No. GL98079, IAG 14947887-01, and the U.S. Army Corps of Engineers Dredging Operations and Environmental Research (DOER) Program under Work Unit 0054PD.

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At the time of publication of this report, Dr. James R. Houston was Director of ERDC, and COL John W. Morris III, EN, was Commander and Executive Director.

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# 1 Introduction

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## Background

Confined disposal facilities (CDFs) have historically been used for disposal of both clean and contaminated dredged material from navigational dredging projects where open-water disposal was not permitted. Many CDFs are nearing capacity. Removal of uncontaminated materials from the CDFs is a viable option for extending the life of these facilities. This approach carries the additional benefit of producing a marketable product for beneficial uses, which can potentially help to offset the cost of processing. Use of CDFs as rehandling facilities, with long-term storage for only the most contaminated sediments, is being investigated by the U.S. Army Engineer Research and Development Center (ERDC), in partnership with the U.S. Army Engineer District, Detroit, the Great Lakes National Program Office (GLNPO) of the U.S. Environmental Protection Agency (USEPA), and local port authorities.

The feasibility of physical separation as a volume reduction method has been demonstrated at Saginaw Bay (USEPA 1994), the Erie Pier CDF, Duluth/Superior Harbor (Olin and Bowman 1996) and Fort Myers, Florida (Granat 1998). Despite successful demonstrations at these locations and continued interest in the technology, physical separation has not yet been implemented as a standard operational practice, with the exception of the Erie Pier CDF. In part, this is due to the lack of internal expertise regarding physical separation and feasibility determinations, the cost of feasibility evaluations, and equipment availability.

A guidance document addressing principles of physical separation as they apply to soils and sediments, and identifying standard equipment, selection criteria, and potential sources was completed (USEPA 1999b). Technical notes addressing recovery of materials from CDFs were also completed under the Dredging Operations and Environmental Research (DOER) program (Olin-Estes and Palermo 2000a,b; Olin-Estes 2000). Work is ongoing at ERDC, funded under the DOER program, to develop bench-scale methods for economical preliminary feasibility evaluations. While bench-scale testing is a necessary first step, the limited volume of material that can be tested with these procedures cannot provide information regarding the potential heterogeneities of large quantities of material. Industry practice is to follow bench-scale testing with evaluation of an intermediate volume of material using a representative unit operation, such as a hydrocyclone. If these results are promising, a preliminary

treatment train is assembled and pilot-scale testing is conducted in the field. Costs to contract intermediate and pilot testing are typically high given that mobilization/demobilization and equipment costs are relatively insensitive to the volume being processed, and most vendors cannot accept contaminated sediments for pilot testing in-house. Availability of a mobile hydrocyclone unit could result in significant cost savings for feasibility evaluations and small-scale projects, and ultimately facilitate full-scale implementation of this technology. The long-term goal is assemble a mobile physical separation plant suitable for separation of sediments and dredged material to serve the Great Lakes CDFs.

Questions remaining to be addressed before full-scale implementation is feasible include the following:

- a. The degree of bulking of residual materials, with and without flocculants, and the short- and long-term effects on CDF capacity recovery.
- b. Alternatives for dewatering residual materials to minimize bulking effects, and their cost, effectiveness, and effect on suitability of residual materials for beneficial uses.
- c. The relative benefit and feasibility of making finer separations (silt/clay) to recover additional material from CDFs.
- d. Evaluation procedures for determining the potential contaminant levels in fine residuals and the effect on the regulatory classification of these materials.
- e. Development of cost/benefit algorithms incorporating all of these considerations for economic feasibility evaluations.

## **Project Objectives**

Identification and purchase of a portable hydrocyclone unit suitable for conducting separation feasibility evaluations and a small-scale field demonstration was the principal objective of this project. While the predominant focus is coarse material recovery for beneficial use as beach nourishment and construction fill (typically requiring the material to contain less than 10-15 percent fines), some beneficial uses will accommodate higher percentages of fine material. The silt/clay separation is expected to be an important long-range objective in maximizing material recovery from CDFs for material in which the silt fraction is substantially less contaminated than the clay fraction. Separation capability at the sand/silt interface (approximately 75 microns) with the additional capability of a silt/clay separation (at 2-3 microns) were therefore the principal operating specifications. Additional criteria were (a) level of expertise required for operation, (b) auxiliary equipment required to support operation, and (c) material preparation required. The equipment may also be used to address other information gaps, as previously described.

## Identification of Available Equipment Types and Vendors

A wide variety of equipment is marketed for size and density separations within the mining industry. However, the equipment is typically designed for coarser and higher density materials. Although there is a significant body of knowledge pertaining to the principles of operation of individual pieces of equipment, there is little guidance in developing a treatment train for processing soils and sediments. Fines, often termed slimes, are considered an operational problem in the mining industry, and are removed as a waste stream prior to making the principal separations. Contaminated sediment separations, however, involve making efficient separations near or within that "waste" fraction, and require the ability to handle and even recover the finest residuals. The condition of the materials presented to the plant will be highly variable, depending upon whether they are consolidated materials excavated from a CDF, or mechanically or hydraulically dredged sediments processed at the time of disposal. In situ water content may vary from 50 to 150 percent, presenting difficulty in handling and in processing through equipment designed for dry (less than 10 percent moisture content), or noncohesive, material. Previous testing of laboratory-scale mining equipment has demonstrated that the feed limitations are not always well defined, and the normal operating parameters may not interface well with the separations of interest for soils and sediments. Even among Architect/Engineer firms with experience in soil washing, assemblage of a treatment train appears to be something of an art, with the configuration varying depending upon specific site conditions. The result is an unacceptable number of operational unknowns for the layman and highly localized expertise within the consulting industry, which ultimately translates to prohibitive cost.

The significant objective of this phase of the project then was to evaluate how the equipment industry has responded to the potential in the sediment remediation arena: identifying the critical core pieces of equipment necessary for the key separations of interest and the minimum necessary auxiliary equipment required in support. The desired outcome is a portable testing unit that (a) is economical to purchase and operate, (b) can be supported with widely available equipment, (c) is adaptable to operational conditions and constraints at different facilities, and (d) is technically simple, operable by field personnel with a reasonable amount of preliminary instruction and technical support.

## Testing of Candidate Equipment

The core unit to be evaluated under this project was a hydrocyclone separator. Performance factors for the equipment considered for demonstration and purchase were as follows:

- a. The experience of the offeror in conducting size separation studies with dredged material and/or soil.
- b. Suitability of the equipment to separate sediment/soil at the 75- $\mu$ m target size cutoff.



- c.* Capability to produce a dewatered coarse product.
- d.* Suitability of the equipment to handle a variety of sizes and types of dredged material.
- e.* Portability of the unit.
- f.* Capacity of the unit.
- g.* Cost of the unit.
- h.* Cost of the demonstration.
- i.* Auxiliary equipment and site preparation requirements and costs.
- j.* Technical expertise required for operation.
- k.* Compatibility of equipment capacity with available storage area, water handling capability, and material preparation and feed capability at the demonstration site.

Preparation and auxiliary equipment requirements, adaptability, and technical expertise requirements were all relatively readily determined from product/offeree information and equipment design. Feed sensitivity and separation efficiency are best evaluated based on a performance test. It was anticipated that potential operational difficulties in this application and considerations of scale and logistics should come to light as a result of the demonstration. Samples were to be taken over a reasonable operating period to permit an assessment of the efficiency of the unit in making the desired separation, response to feed variations (if any), and the variability of the product material. A successful test would meet the separation criteria in a dewatered product, with a minimum of operational problems, at the specified efficiency. For the proposed demonstration, the specified cut point was 75  $\mu\text{m}$ , with no more than 10 percent fines (percent by weight passing a No. 200 sieve) in the underflow.

## 2 Project Description

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The Bayport CDF in Green Bay, WI (Figure 1), was selected as the field demonstration site. Green Bay is located on the eastern shoreline of Wisconsin, on Lake Michigan. Approximately 115,000 cu m (150,000 cu yd) of sediment are dredged annually, to maintain the 29-km- (18-mile-) long shipping channel in the Port of Green Bay. The Bayport disposal facility was filled to design capacity in the early 1970's. Brown County sought and received authorization to dispose of additional dredged material there. Current operations involve mechanical dredging, with transport and offloading at the CDF by truck. To extend the life of the facility as long as possible, material is periodically removed from the facility, following a period of dewatering. The facility is divided into separate cells to permit offloading, dewatering, excavation, and stockpiling to occur concurrently. The Brown County Port Authority has taken an active interest in innovative management alternatives for dredged material, and the Bayport CDF was also recently the site of a biotreatment demonstration.

### Project Activities

ERDC physical separation equipment available for demonstration/testing support was inventoried and its operational status verified. Response to an advertisement for technical support in identification of equipment alternatives and sources and development of a basic treatment train was limited (one firm responded) and exceeded the project budget for this task area. An extensive in-house effort was therefore initiated to locate off-the-shelf equipment, and to identify those firms with interest in conducting a small demonstration and with availability of suitable scale equipment for preliminary field evaluation. Of the vendors contacted, only two indicated an interest in bringing equipment onsite for a small-scale demonstration: Tri-Flo Industries, Ltd., of Conroe, TX, and MetPro Supply, Inc., of Bartow, FL. Only one, MetPro Supply, responded to the advertisement for bids.

Tri-Flo Industries manufactures mobile, self-contained, fluid-processing equipment. Initially targeting the drilling industry, hydrocyclones mounted in series to a prefabricated header can be purchased, as well as complete, mobile, micro-fluid systems (MFS) designed for drilling mud recovery. These systems include a sump, mud "guns" for maintaining sediment in suspension, a shaking screen, hydrocyclones, and pumps. The configuration appears to have potential for sediment separation, but prescreening of gross oversize and slurring of consolidated material would likely be needed to utilize the equipment as

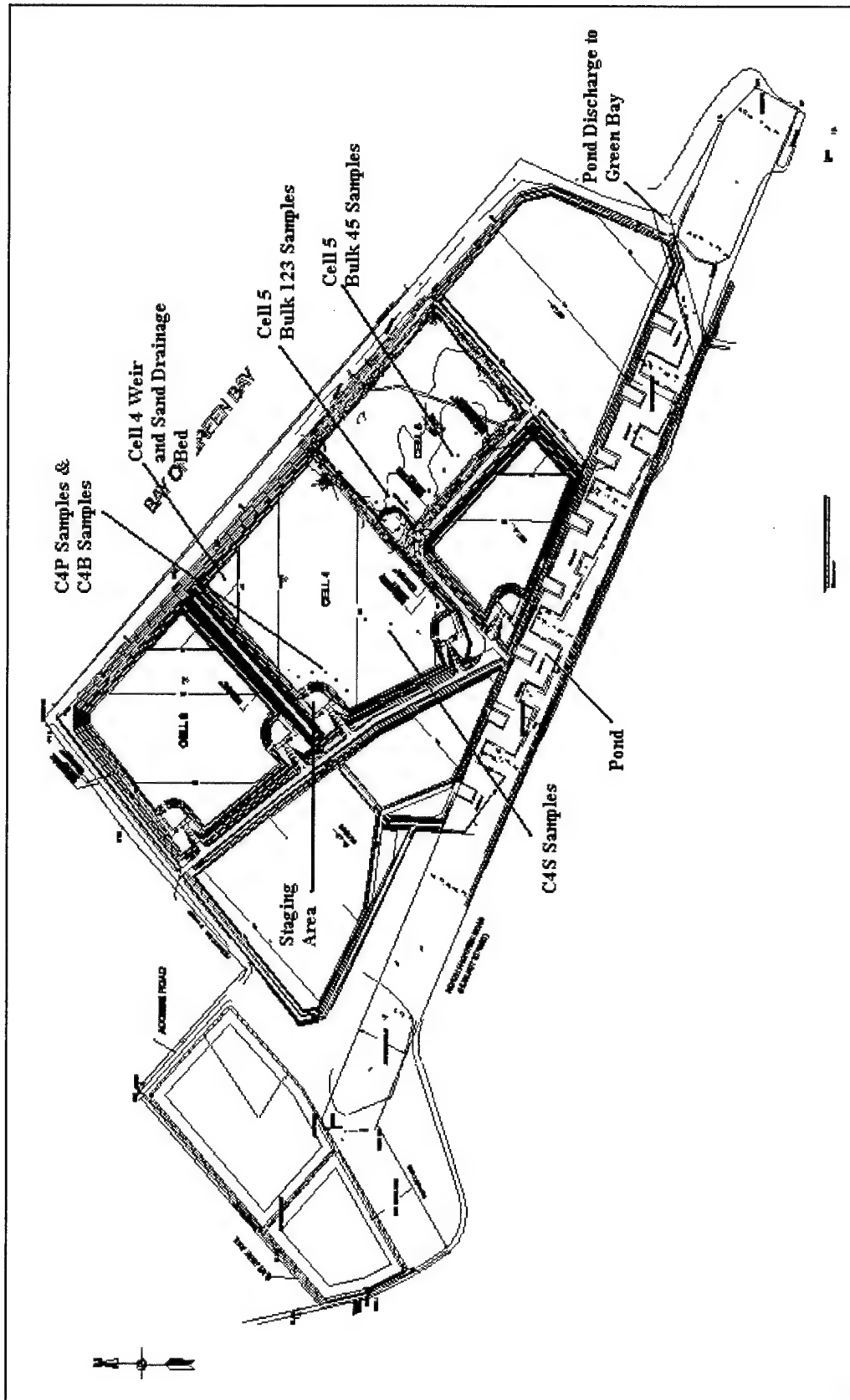


Figure 1. Green Bay Bayport CDF

presently equipped. One advantage to the configuration was the potential for making the sand/silt separation on the screen, followed by a finer cut at the hydrocyclones, thus addressing both size separations of principal interest with one unit. Tri-Flo also manufactures a mud pump that could be useful for excavating and slurring consolidated material. The mud pump is equipped with an integral screen that prevents the pump from picking up oversize particles. Principal limitations of the equipment were the potential for blinding of the screens, the inability of screens to separate coarse organic materials from coarse minerals, and the fact that this equipment has not been demonstrated for dredged material or sediments.

MetPro Supply manufactures a self-contained maximum density separator (MDS) consisting of a trailer-mounted sump, slurry pump, and MDS. Both 0.15- and 0.3-m (6- and 12-in.) MDS have been demonstrated on sediments in the U.S. Army Engineer District, Jacksonville. Based on previous testing, MetPro recommended a 0.61-m (24-in.) MDS to produce a coarse fraction with less than 10 percent fines entrained. A 0.61-m (24-in.) MDS has a throughput of approximately 4.5 cu m (1,200 gal) per minute (approximately 68,039 kg (75 tons) solids per hour), and can accept particles up to 25-38 mm (1 – 1-1/2 in.) in diameter, thus simplifying prescreening. Dry or slurried material could be fed to the sump, with adjustments to the volume of makeup water supplied. The MDS differs from a conventional hydrocyclone in that a flexible sleeve is attached to the apex of the cone, and a vacuum is applied to the overflow line, thus restricting discharge of underflow until sufficient weight accumulates to force discharge. This reportedly results in a higher solids underflow.

Because of the potential variability in feed requirements, the offerors were tasked with providing the necessary auxiliary equipment to support the proposed separation unit, in effect developing a compatible treatment train. Mechanical excavation and prescreening were to be handled by the Detroit District. Auxiliary equipment was located in the Green Bay/Milwaukee area. A powerscreen for prescreening material; water supply pump; flexible, quick-coupling water hoses; and generator were available and obtained as short-term rentals.

Because the target separation of the proposed equipment was 75  $\mu\text{m}$ , it was necessary to locate material containing sufficient sand to permit evaluation of the efficiency of the equipment in making this separation. Based on anecdotal information, Cell 5 was initially identified as containing sandy material from the outer harbor. Core and near-surface bulk samples were taken from Cell 5 for evaluation. However, finer material had apparently been placed over the target material, and the near-surface dredged material contained little sand. Additional samples were therefore taken for evaluation from Cell 4, where additional coarse material had recently been placed. (This material was from an inner harbor dredging project, and may not be representative of outer harbor sandy sediments).<sup>1</sup> Sampling, sample handling, and bench-scale testing are further detailed in subsequent sections of this report. Approximately 380 cu m (500 cu yd) were

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<sup>1</sup> Dean Haen, Personal Communication, 5 November 2001, Port Manager, Brown County Port and Solid Waste Department (Port of Green Bay), Green Bay, WI.

also excavated from Cell 5 for evaluation of material handling properties and effects of debris on ease of excavation as part of a cooperative effort funded under the DOER program. Some of this material was processed through the powerscreen to evaluate performance of a dry screen with wet of optimum material, and to evaluate the feasibility of feeding the hydrocyclone using mechanical excavation and prescreening. A smaller volume of material was excavated from Cell 4 for comparative processing through the screen. The remainder of the Cell 4 excavation was accomplished hydraulically, at the time of the demonstration.

## Field Sampling and Sample Handling

Nineteen 25.4-mm- (1-in.-) diameter cores were taken from Cell 5 of the Bayport CDF (Figure 1) to assess moisture content of the material initially proposed for processing. The cores were taken from along the truck dump and the south dike, areas accessible for mechanical excavation, using an AMS Soil Core Sampler with slide hammer, including stainless steel soil collector, and 25.4- by 0.6-mm (1- by 24-in.) butyrate plastic liners with polyethylene caps. (Although 0.6-m (24-in.) tubes were used, in many cases only 0.15-0.5 m (6-18 in.) of dredged material was recovered due either to the compressibility of the material or the inability to drive the sampler deeper.) Five 19-L (5-gal) samples intended for bulk sediment chemistry and fractionation testing were taken along the same perimeter and placed in high-density polyethylene (HDPE) buckets, using a shovel decontaminated with acetone and distilled deionized (DDI) water between samples. Each bucket was placed in a cooler and packed in ice for shipment. Chain-of-custody forms were placed inside the coolers and coolers were sealed with tape and chain-of-custody seals. Chain-of-custody seals were intact upon receipt at the laboratory. Temperatures of the samples upon arrival were below 4 °C (1.7 to 3.3 °C), with the exception of Bucket 4, which was 5 °C. Core samples were not intended for chemical analysis and were therefore not refrigerated. They were left in the disposable plastic liners and shipped together in a cooler for later extrusion.

Before samples were taken from Cell 4, representative material was screened in the field to verify the presence of sand. Based on the field screening, the Cell 4 material along the northwest truck dump was roughly estimated to contain 40 – 50 percent sand. Samples were subsequently taken for laboratory analysis along the northwest truck dump (adjacent Cell 2), and along a radius from the southwest truck dump (adjacent Cell 5 and the road) toward the outlet. Because this was a duplicate effort, a repeat full-scale sampling effort was not feasible. Smaller sample volumes were therefore obtained during a subsequent site visit and progress meeting.

Twelve 0.9-L (1-qt) glass jars were obtained from Cell 4: three for bulk chemical analysis (C4B1-C4B3), six for particle size analysis (C4P1-C4P6) from the perimeter of the northwest truck dump, and three (C4S1-C4S3) for particle size analysis along the inner radius. Sample preservation and chain of custody were observed as for the Cell 5 samples.

## Characterization and Bench-Scale Testing

### Cell 5 characterization and bench-scale testing

The three 19-L (5-gal) samples taken from along the truck dump were mixed together (Buckets 1, 2 and 3 identified hereafter as Bulk 123 composite) and homogenized. The two 19-L (5-gal) samples taken along the dike (Buckets 4 and 5 identified as Bulk 45 composite) were also combined and homogenized. Wet chemistry, moisture content, and particle size distribution were evaluated on both composites. Because these parameters were relatively comparable for the two composites, one was selected for fractionation testing, rather than compositing the total volume. Bulk 123 was selected because of the greater accessibility of the area from which those buckets were taken, and the greater likelihood that they would be excavated. The cores were extracted from the plastic tubes, and samples were taken for water content analysis.

**Particle size analysis.** Subsamples of the Bulk 123 and Bulk 45 composites were analyzed on the Coulter particle size analyzer. Both composites contained over 90 percent fines.

**Bulk sediment chemistry.** The Bulk 123 composite and Bulk 45 composite were analyzed for polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), metals, total organic carbon (TOC), total recoverable petroleum hydrocarbons (TRPH), and oil and grease (O&G) (the latter three being potential indicator compounds). Results are summarized in Table 1. Concentrations were comparable for all analytes for both composites.

**Water content analysis.** The core samples (44 total) were analyzed in duplicate for water content ( $w = (M_{\text{water}}/M_{\text{solids}}) \times 100$ ) by oven drying. The average water content was  $112.4 \pm 24.6$  percent. Water content of the Bulk 123 and Bulk 45 composites averaged 98.7 and 82.2 percent, respectively.

**Fractionation testing.** Approximately 10.5 kg (wet weight) of the Bulk 123 sample was wet sieved through a 75- $\mu\text{m}$  sieve for analysis of the sand ( $>75 \mu\text{m}$ ) and fines ( $< 75 \mu\text{m}$ ) fractions. The resultant slurries were centrifuged and the solids retained for particle size and chemical analysis. Both fractions were analyzed on the Coulter LS100 Particle Size Analyzer to determine the efficiency of the separation. The results (Table 2) show that the fines were not very effectively removed from the sand. Further separation of the clay and silt from a subsample of the fines was attempted using an upflow column. The clay was never effectively removed from the fines, and the samples were therefore not further analyzed.

Additionally, a subsample of the Bulk 123 was fractionated by density using heavy media separation in order to analyze the contaminant differences between mineral and organic sediment material. In this procedure, the sediment was combined with a solution of sodium polytungstate at a specific gravity of 2.0. The mixture was briefly sonicated and then centrifuged to separate the density fractions. The material heavier than 2.0 specific gravity (mineral) sank to the bottom, and the lighter fraction (organic) floated on top of the solution and was

<b>Table 1</b> <b>Green Bay Cell 5 Chemical Analysis of Bulk Sediment, Size, and Density Fractions</b>						
Description	Bulk Sediment		Size Fractions		Density Fractions	
	Composite 45	Composite 123	<75 µm (Fines)	>75 µm (Sand)	>2.0 sp.gr. (Mineral)	<2.0 sp.gr. (Organic)
<b>Indicator Analytes</b>						
TOC, mg/kg	44833	48567	41300	38900	27800	47700
O&G, mg/kg	147	213	210	1030	67	640
TRPH, mg/kg	78	106	106.5	525	54	350
TVS, %					<4	<4
<b>Metals, mg/kg</b>						
AS	3.29	3	2.95	3.55	1.8	2.99
CD	0.939	1	0.825	1.11	0.669	1.94
CR	53.33	52	47.05	50.65	41.3	85.2
CU	48.93	52	43.85	72.7	27.3	97.2
PB	68.8	64	58.3	76.8	40.9	51
HG	1.017	1	1.0345	1.44	0.625	2.2
NI	20.53	22	19.85	17.2	17.2	17.4
SE	1.06	1	0.95	1.55	0.599	0.998
AG	0.53	0	0.45	0.3	0.4	0.599
ZN	142.7	143	154	145.5	91.5	128
BA	81.70	83	77.95	57.65	70.7	73.5
FE	16300	16300	15500	10750	14600	7850
MN	442	485	436	832	382	434
MO	0.265	0	0.3	0.4	0.2	0.699
<b>PCBs, µg/kg</b>						
PCB-1016	<22.5	<24.5	<24.5	<29.7	<15.8	<27.1
PCB-1221	<22.5	<24.5	<24.5	<29.7	<15.8	<27.1
PCB-1232	<22.5	<24.5	<24.5	<29.7	<15.8	<27.1
PCB-1242	1307	1161	970	1742.5	351	3278
PCB-1248	<22.5	<24.5	<24.5	<29.7	<15.8	<27.1
PCB-1254	<22.5	<24.5	<24.3	<29.7	<15.8	<27.1
PCB-1260	49.5	52.3	39.95	77.9	27.3	111
<b>PAHs, µg/kg</b>						
NAPHTH	125	165.3	85.95	367	29.9	513
ACENAY	9.0	10.0	<20	41.2	<6.4	43.4
ACENAP	14.3	21.6	11	61.85	<6.4	72
FLUORE	36.2	42.5	27.75	123	10.8	169
PHENAN	220	269.3	176	877	70	1180
ANTRAC	39.8	49.7	29.2	193.5	10.2	215
FLANTHE	309	388.0	260.5	1130	99.9	1690
PYRENE	301	391.7	240	1360	82.1	1570
(Continued)						

<b>Table 1 (Concluded)</b>						
Description	Bulk Sediment		Size Fractions		Density Fractions	
	Composite 45	Composite 123	<75 µm (Fines)	>75 µm (Sand)	>2.0 sp.gr. (Mineral)	<2.0 sp.gr. (Organic)
PAHs, µg/kg (Concluded)						
CHRYSE	192	247.7	152	850	66.2	992
BAANTHR	139	180.3	97.95	756	29.9	720
BBFLANT	127	173.3	112.5	565	53.4	762
BKFLANT	101	139.0	76.35	463.5	32.4	521
BAPYRE	149	193.3	108.45	769	35.6	747
I123PYR	122	164.3	99.45	540	39.4	637
DBAHANT	26.6	29.2	19.5	114	5.1	105
B-GHI-PY	149	179.3	112.5	614	48.3	678
2MeNAPH	130	157.7	98.95	426	31.8	574

<b>Table 2 Particle Size Analysis of Green Bay Cell 5 Samples</b>				
Volume, %	Bulk 45	Bulk 123	Sand	Fines
< 5 µm	27.1	24.3	5.88	30.5
< 75 µm	93.3	90.8	43.5	99.98
> 75 µm	6.70	9.2	56.5	0.02

removed. The procedure was repeated several times to ensure a reasonably clean separation, as determined by visual inspection.

The four fractionated samples (fines, sand, mineral, organic) were analyzed for PAHs, PCBs, metals, and indicator analytes. Density (mineral and organic) samples were also analyzed for total volatile solids (TVS) to assess efficiency of separation, but this parameter was ultimately not useful, being less than the detection limit (DL) for both fractions. Results are summarized in Table 1.

The contaminant concentrations among the sand and fine fractions display trends opposite of that expected. The sand fraction is typically assumed to be relatively clean, and the fines to contain higher contaminant levels due to higher surface area and clay chemistry. Here, however, PAH and PCB concentrations in the sand exceed that of the fines, many by an order of magnitude. Most metal concentrations (arsenic, cadmium, chromium, copper, lead, mercury, selenium, manganese, molybdenum) were also higher in the sand than in the fines, but within the same order of magnitude. During wet sieving, an oily film was noted to settle on top of the sieved sand. It was thought that much of the contamination could be associated with this film, or with a coarse organic fraction. To evaluate this, the correlation coefficient was calculated for oil and grease and TOC concentrations versus PAH, PCB and metal concentrations. The resulting values indicate a strong linear relationship between oil and grease and PAH



concentrations, and a moderate relationship between oil and grease and PCBs and metals concentrations (Figures 2, 3, and 4), with the exception of selenium and manganese, which evidenced a strong linear relationship. PAH versus PCB concentrations were quite strongly linear. The correlation coefficient for TOC versus PAH, PCBs, and metals indicates a moderate to weak linear relationship. Note that this does not imply that there is not a strong relationship, simply the absence of a strong linear relationship.

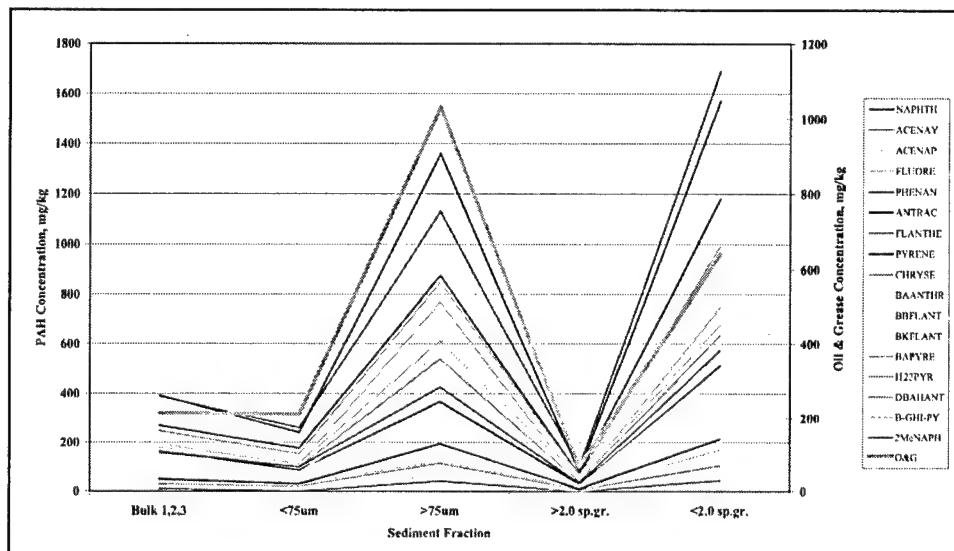


Figure 2. PAH versus oil and grease concentrations, Cell 5 material

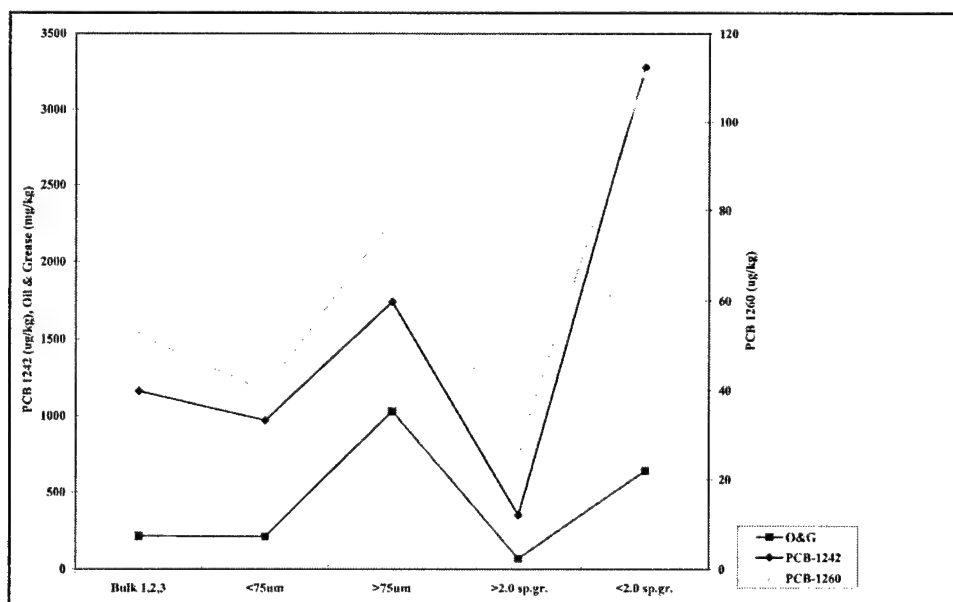


Figure 3. PCB versus oil and grease concentrations, Cell 5 material

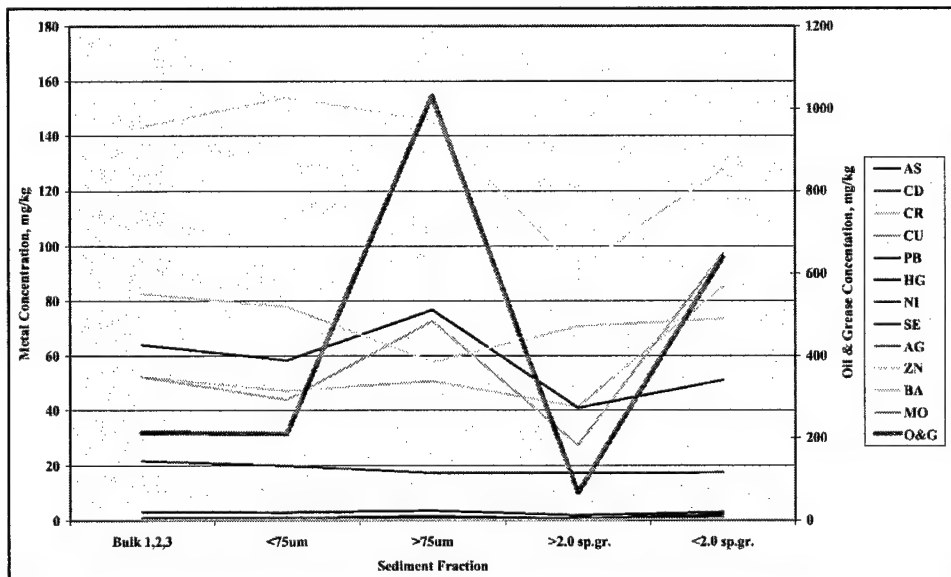


Figure 4. Metals versus oil and grease concentrations, Cell 5 material

The contaminant differences between the mineral and organic fractions were as expected, revealing order of magnitude greater PAH and PCB concentrations in the organic fraction. Metals were not as clearly distributed. Although higher concentrations of metals were present in the organic fraction, they were at the same order of magnitude as in the mineral fraction. Iron was an exception to this, being an order of magnitude higher in the mineral fraction than in the organic fraction. On average, metal concentrations were twice as high in the organic as in the mineral fraction (excluding iron), and PAHs and PCBs in the organic fraction averaged 18 and 7 times, respectively, that of the mineral fraction.

#### Cell 4 characterization and bench-scale testing

**Particle size analysis.** Samples C4P2, C4P4, and C4P6 were analyzed on the Coulter particle size analyzer to verify that a significant sand fraction was present. Percent greater than 75 µm was approximately 40, 54, and 62 percent, respectively (by volume). Coulter analysis of the homogenized C4B samples indicated approximately 32.8 percent > 75 µm. The samples taken from along the inner radius C4S1-3 were also analyzed on the Coulter, with the volume percent less than 75 µm ranging from 96.5 to 99.6 percent, indicating that particular area would not be a good candidate for sand recovery. Output from the Coulter for the C4B samples is presented in Appendix A. Particle size analysis results are given in Table 3.

<b>Table 3</b> <b>Particle Size Analysis of Green Bay Cell 4 Samples</b>				
<b>Volume, %</b>	<b>C4P2</b>	<b>C4P4</b>	<b>C4P6</b>	<b>C4B</b>
< 5 µm	15	13	10	20
< 75 µm	60	46	38	67.2
> 75 µm	40	54	62	32.8

**Bulk sediment chemistry.** The C4B1, C4B2, and C4B3 samples were homogenized, and two samples were then taken for bulk chemical analysis. The average concentrations for the composite are reported in Table 4. The analysis revealed the existence of some PAHs and metals, and concentrations of 3,755 and 39 µg/kg, respectively, for PCB 1242 and PCB 1260.

**Water content analysis.** The water content of the C4P2, C4P4, and C4P6 samples was measured in duplicate by oven drying. The water contents averaged 59, 36, and 27 percent, respectively, for the three samples.

**Fractionation testing.** Although a full size and density separation was desired on the Cell 4 material, due to time constraints the most important separation to evaluate initially was the sand/silt separation at 75 µm. This separation was achieved by wet sieving a subsample of the material through a 75-µm sieve. The sand fraction was washed off the sieve, and the wash water was then drained off the sand. The sand sample was analyzed with the Coulter LS100 Particle Size Analyzer and was found to contain only 5.5 percent <75 µm and 1.1 percent < 5 µm by volume, indicating a relatively clean separation. Half the fines slurry was flocculated using Hychem, Inc., CP626 cationic polymer. Two (duplicate) samples from both the dewatered sand and flocculated fines (silt/clay) samples were analyzed for chemical constituents as summarized in Table 4. The other half of the fines fraction was reserved for further fractionation testing. The unflocculated silt and clay fractions were separated using a 50-mm (2-in.) hydrocyclone and the fractions analyzed for PCBs and indicator analytes. The silt and clay fractions were analyzed on the Coulter to evaluate effectiveness of the hydrocyclone separation. Approximately 5.7 percent of the silt fraction was greater than 75 µm, and approximately 14 percent less than 3 µm. The presence of particles greater than 75 µm in the silt fraction can be attributed to oblong particles that pass through the #200 sieve, and agglomeration of particles, which the Coulter may read as a single, larger particle. The clay fraction was less clean, with a mean particle size of 15.24 µm, and a median particle size of 6.39 µm. Approximately 90 percent of the clay fraction was less than 36 µm, and 50 percent less than 6.4 µm. Only 25 percent was less than 2.7 µm. The silt and clay fractions were also subsequently analyzed for chemical constituents (Table 4).

Unlike the Cell 5 analysis, the Cell 4 data follow the expected trends, with greater concentrations of the contaminants associated with the fines than with the sand. Concentrations of metals in the silt/clay fraction are almost all one to two orders of magnitude higher than in the sand. PCBs are an order of magnitude higher in the silt/clay fraction than in the sand. Differences in concentrations

Table 4 Chemical Analysis of Cell 4 Bulk and Fractionated Sediment Samples					
Analyte	Size Fractions				Bulk Sediment Avg. Conc.
	Sand (>75 μm) Avg. Conc.	Silt/Clay (<75 μm) Avg. Conc.	Silt (≈5 μm - 75 μm) Conc.	Clay (<5 μm) Avg. Conc.	
Indicator Analytes					
TOC, mg/kg	1435	21100	9180	78900	27300
O&G, mg/kg	43	475	110	320	220
TRPH, mg/kg	10.5 J <sup>1</sup>	270	46	180	185
TVS, %					<4%
Metals, mg/kg					
AS	0.45	5.05	2	6.85	2.2
CD	0.04	1.355	0.32	2.29	0.6045
CR	3.05	79.95	15.1	134	29.8
CU	10.05	75.25	21.2	113	32.8
PB	5.6	101.2	242	193.5	43.7
HG	0.02	3.45	0.363	2.85	1.085
NI	2.2	27.1	7	36.9	10.8
SE	<0.200	1.1	0.3	1.3	0.4995
AG	0.4	0.8995	0.4	1.6	0.4995
ZN	13.5	148.555	320	681	76.1
BA	4.6	104.5	27.5	183	42.85
FE			10500	30600	3822.4
MN	44.25	325.5	174	321	140
MO	<0.100	0.849	0.5	1	0.3495
PCBs, μg/kg					
PCB-1016	<10.3	<38.9	<11.2	<40.5	<12.7
PCB-1221	<10.3	<38.9	<11.2	<40.5	<12.7
PCB-1232	<10.3	<38.9	<11.2	<40.5	<12.7
PCB-1242	444	5927.5	1950	7595	3754.5
PCB-1248	<10.3	<38.9	<11.2	<40.5	<12.7
PCB-1254	<10.3	<38.9	<11.2	<40.5	<12.7
PCB-1260	21.4	317.5	18.2	238	39
PAHs, μg/kg					
NAPHTH	* <sup>2</sup>	*	*	*	123.5
ACENAY	*	*	*	*	14.2
ACENAP	*	*	*	*	41.25
FLUORE	*	*	*	*	53.4
(Continued)					
<sup>1</sup> Indicates estimated concentration for analyte that is above MDL but below LRL. <sup>2</sup> * Due to budgetary constraints, fractionation testing was limited to PCBs and metals, which were thought to be of greatest concern. There was insufficient silt sample for duplicate analysis; results given are therefore based on analysis of only one sample.					

Table 4 (Concluded)					
Analyte	Size Fractions				Bulk Sediment Avg. Conc.
	Sand (>75 µm) Avg. Conc.	Silt/Clay (<75 µm) Avg. Conc.	Silt (≈5 µm - 75 µm) Conc.	Clay (<5 µm) Avg. Conc.	
PAHs, µg/kg (Concluded)					
PHENAN	*	*	*	*	228.5
ANTRAC	*	*	*	*	46.55
FLANTHE	*	*	*	*	217
PYRENE	*	*	*	*	263
CHRYSE	*	*	*	*	148
BAANTHR	*	*	*	*	125
BBFLANT	*	*	*	*	85.1
BKFLANT	*	*	*	*	73.4
BAPYRE	*	*	*	*	117.5
I123PYR	*	*	*	*	82
DBAHANT	*	*	*	*	15.45
B-GHI-PY	*	*	*	*	95.55
2MeNAPH	*	*	*	*	145.5

between the silt fraction and the clay fraction are not as consistent, but concentrations in the clay fraction are higher for all analytes tested. TOC in the clay fraction is approximately 8.5 times that in the silt. Oil and grease, TRPH, PCB-1242, and PCB-1260 in the clay fraction are 2.9, 3.9, 3.9 and 26 times greater, respectively, than in the silt. Based on correlation coefficients, there is a strong positive correlation between metals concentrations and oil and grease and TRPH concentrations (Figure 5). Metals are moderately correlated to TOC concentration. There is also a moderate to strong positive correlation between PCBs, TRPH, and oil and grease (Figure 6) and PCBs and TOC (Figure 7).

## Test Candidate Unit

A 1-day field demonstration was scheduled for 10 August 2000 at the Bayport CDF, Green Bay, WI. Equipment arrived onsite on Monday, 7 August 2000. Three full days were required to set up the system. This was not sufficient time to debug and troubleshoot, however; a cold start was made on the day of the demonstration. An electrical problem, unrelated to the separation unit, caused a minor delay. The system ran intermittently after that, with additional delays for clearing the jet pump and replacing or tightening clamps on water supply or slurry delivery hoses. The system was operated for approximately 5 hours, at which time sufficient material had been processed to assess the separation efficiency, and overall system characteristics and trouble points had been identified.

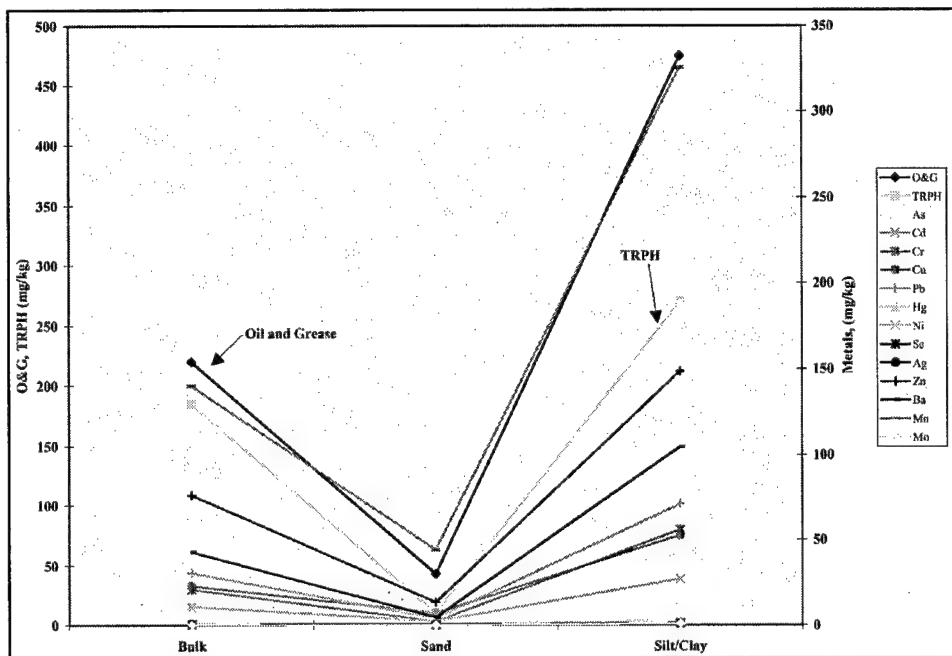


Figure 5. Metals versus TRPH and oil and grease concentrations, Cell 4 material

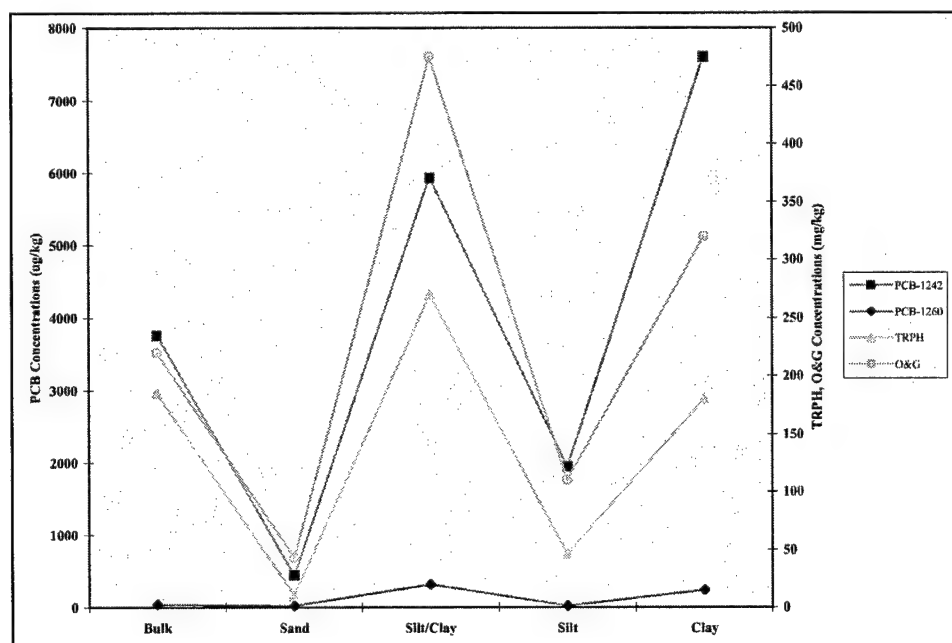


Figure 6. PCB versus TRPH and oil and grease concentrations, Cell 4 material

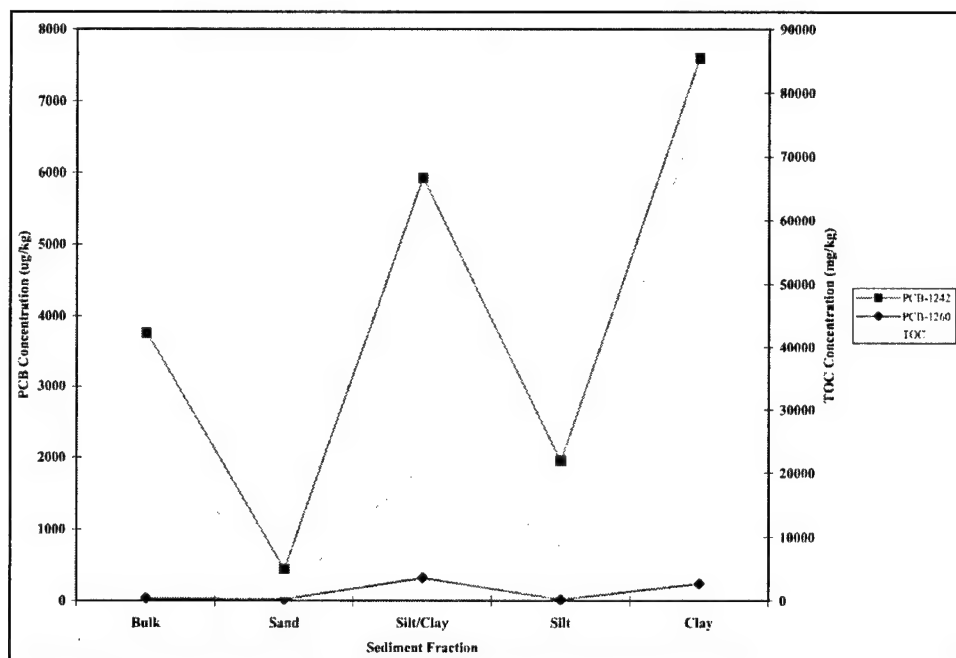


Figure 7. PCB versus TOC concentrations, Cell 4 material

## Site logistics

The Cell 4 staging area was much farther from the freshwater source than the staging area originally selected for processing the Cell 5 material. Additionally, the Cell 4 staging area was much smaller than the original site, making onsite stockpiling of mechanically excavated material infeasible. It was therefore decided to excavate only a small amount of Cell 4 material for screening testing, and to excavate feed for the hydrocyclone using a modified jet pump. This was a particularly attractive alternative because of the potential benefits of small-scale hydraulic excavation or mechanical excavation (accessibility in unstable material, maneuverability around debris), and the added information that would result from a single effort. The principal disadvantage of this approach was that the process water had to be pumped approximately 300 m (1,000 ft) to the excavation point.

## Equipment

Because of the distance between the staging area and the freshwater source, a larger water pump, transfer hoses, and generator were required than for the original staging area. Water pump, generator, and flexible hoses with quick couplings were available and obtained on a short-term rental basis. The MetPro mobile unit was as previously described in the section "Project Activities," consisting of a trailer, slurry pump, sump, and 0.6-m (24-in.) MDS (Figure 8). The eductor pump was fitted with an exterior ring, providing water jets for horizontal excavation (Figure 9). A powerscreen was also rented for screening the mechanically excavated material (Figures 10 and 11). The unit consisted of a grizzly, hopper with shredder, conveyer and shaking screen, equipped with a



Figure 8. MetPro mobile MDS unit



Figure 9. Eductor pump





Figure 10. Powerscreen



Figure 11. Screen undersize

harp screen to enhance processing of clayey material and reduce plugging due to wet material.

### **Field operation**

The generator and water pump performed well, and similar equipment should be readily available at most locations. The flexible hoses were not designed to operate at the optimum delivery pressure, however. Several failures of the coupling/hose attachment occurred, but once this problem was addressed, the hoses performed reasonably well with the pump discharge throttled back somewhat. Based on this experience, however, it is thought that suitable hoses should be purchased for future operations. The eductor pump, although somewhat crudely assembled for the purposes of demonstration, performed fairly effectively. Although the site was heavily vegetated, the vegetation did not prevent excavation of the sediment in situ. Some variability was noted in the feed percent solids. Although this does not appear to have adversely affected the separation achieved, the result is an inefficient utilization of available water supply; and under different circumstances, separation efficiency could be affected. The pump did plug with large woody debris on two or three occasions. This could be prevented with a coarse protective screen at the pump intake. Additionally, no water jets faced in the downward direction. Excavation was impeded when a large rock was encountered underneath the pump. The sump and cyclone performed as expected. There was one failure of a band coupling, and this is potentially a weak point in the system. This connection could be made more secure with permanent piping, rather than the flexible hoses used to deliver the slurry pump discharge to the hydrocyclone inlet.

The Powerscreen performed relatively well considering that the material being fed was much wetter than the equipment is designed to handle. Problems were encountered, however, in feeding the screen. Clay clods rolled off the grizzly, reporting with the oversize. Attempts to push this material through the grizzly were only partially successful and time-consuming. The shaking screen passed the moist, fine materials without any evident problem, but blinding did occur on the coarse upper screen, where 0.1- to 0.15-m (4- to 6-in.) chunks of asphalt collected and had to be manually scraped off. Although the results indicate that the Powerscreen may be useful to prepare a small amount of material for process testing, feeding a full-scale hydrocyclone operation in this manner is probably infeasible.

### **Visitors**

The demonstration was scheduled for 10 August 2000. Notice of the demonstration was posted on the Detroit District Web site, and notification sent directly to regulators and environmental organizations in the region. Approximately 30 people attended the demonstration. Results of the demonstration were also presented to the Great Lakes Commission in October 2000.

## Process sampling

Three 19-L (5-gal) samples were taken simultaneously from the feed slurry and overflow, and three 4-L (1-gal) samples were taken from the underflow at five different intervals during processing (1400, 1505, 1525, 1625, and 1715 hours). Samples were captured and transported in new HDPE buckets. Of these, two from each sampling event were designated for particle size distribution and contaminant concentration analysis. The remainder of the samples were designated for particle size distribution only. The field sampling contractor was responsible for obtaining process samples and packaging and shipping them to ERDC. The overflow was sampled using a J-shaped diverter of polyvinyl chloride (PVC) pipe, which was passed through the overflow stream vertically to obtain a representative sample. The feed stream was sampled from a port welded onto the outlet from the slurry pump, where the slurry was expected to be turbulent and therefore well mixed. The line was purged for a few seconds prior to taking each sample. Underflow samples were captured directly from the cyclone underflow discharge. The volume of underflow samples was reduced from that specified in the Quality Assurance Project Plan<sup>1</sup> due to the high solids content of the underflow; 4-L (1-gal) samples were sufficient for all proposed analysis. Samples designated for chemical analysis were placed in a cooler and packed in ice for shipment. Samples designated for particle size analysis only were not refrigerated. Chain-of-custody forms were completed.

A single 19-L (5-gal) sample of the process supply water was also taken to establish baseline concentrations. It was initially proposed to sample effluent at the pond discharge during and after processing to verify that no permit parameters were violated during processing. However, water levels in the pond were low enough that there was no discharge from the pond at the time of processing, and the process overflow was passed through a sand drainage bed prior to being returned to the pond, reducing suspended solids. Dissolved contaminant levels were therefore measured in the process overflow and compared to Freshwater Acute Federal water quality criteria (USEPA 1999a). Of the parameters measured in the overflow having criteria, none exceeded acute water quality criteria.

Upon arrival at ERDC, the samples were refrigerated, and samples designated for chemical analysis were quickly processed to meet specified holding times. The feed and overflow slurry samples designated for chemical analysis (two field duplicates per stream per sampling time) were sampled while being stirred to obtain representative samples of the slurry. They were then centrifuged, and both solids and supernatant collected for chemical analysis. Percent solids of the underflow samples was much higher, and subsamples were taken directly from the buckets for chemical and particle size analysis without centrifuging. Subsamples of all process solids were also taken for water content and particle size analysis. Due to the difficulty involved in obtaining a representative subsample from a slurry, slurry samples were allowed to settle for

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<sup>1</sup> The QAPP describes the technical quality assurance/quality control for specific data collection, project objectives and organization, sampling design, analytical methods, data quality indicators, and data review (USEPA 1997, 1998).

an extended period of time. The supernatant was then poured off, the supernatant and remaining wet solids weighed, and then water content of the wet solids determined by oven drying. In this manner, the initial solids content of the slurry could be calculated. The settled solids were analyzed on the Coulter particle size analyzer for particle size distribution.

## Results

### Particle size analysis

Results of the particle size data for samples taken from the feed and overflow samples while stirring versus samples taken from the settled slurries were different. Because the settled slurries were still relatively liquid but at a higher percent solids, it was possible to mix them thoroughly and avoid rapid settling of coarse particles, thus producing more representative samples of all size ranges in the solids. The feed and overflow particle size distributions reported in Table 5 are for the subsamples taken from the settled samples. The underflow contained less than 8 percent fines by volume. Depending upon the specific gravity of the particles, this can be converted to percent fines by weight. Because the Coulter counter measures particle volume only (void volume is not measured), percent sand by volume can be taken to be approximately equivalent to percent sand by mass, assuming the same specific gravity for all particles in the material.

### Percent moisture/percent solids

Results of percent moisture ( $W_{\text{water}}/W_{\text{total}}$ ) and percent solids ( $W_{\text{solids}}/W_{\text{total}}$ ) for the process streams are summarized in Table 6. The percent solids of the feed varied from 1.8 to 5.9 percent by weight. This is a relatively dilute feed stream. Although the separation efficiency is enhanced by a dilute feed stream, operational efficiency overall is lower than optimum. Percent solids of the underflow was quite high, ranging from 75.2 to 80.3 percent, reflecting the coarse nature of the underflow. Mean percent moisture of the underflow was approximately 22 percent, compared with approximately 98 percent for the feed and overflow process streams.

### Chemical analysis

The results of the chemical analysis for each replicate at each sampling time were averaged for the three process streams, and are summarized in Table 7. For comparison, results of the bench-scale characterization for these fractions are given in parentheses. Qualitatively, the bench-scale testing appears to have given a relatively representative indication of the contaminant levels in the field-scale process streams. To evaluate whether the concentrations in the process and characterization fractions are essentially equivalent, the data were evaluated. Contaminants included arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc, barium, PCB 1242, PCB 1260, TOC, oil and grease, and TRPH. One-half the detection limit was used for contaminant concentrations less than the detection limit. The Statistical Analysis System (SAS) release 8.1 was used to perform the data analysis (SAS Institute, Inc., 1989a, 1989b). The statistical procedures and assumptions are more fully

<b>Table 5</b> <b>Particle Size Analysis of Streams from the Mobile Hydrocyclone Demonstration</b>			
Sample	Sand Volume % > 76.42 $\mu\text{m}$	Silt Volume % 5-76.42 $\mu\text{m}$	Clay Volume % < 5 $\mu\text{m}$
<b>Feed</b>			
F1400	26.2	55.6	18.2
F1505	23.4	59.1	17.5
F1525	33.5	49.6	16.9
F1625	26.9	55.2	17.9
F1715	30.4	52.5	17.1
Average	28.1	54.4	17.5
<b>Overflow</b>			
O1400	15.7	61.8	22.5
O1505	11.5	68.7	19.8
O1525	22.5	57.5	20
O1625	19.7	63.8	16.5
O1715	23.9	55.9	20.2
Average	18.7	61.5	19.8
<b>Underflow</b>			
U1400	91.36	7.02	1.62
U1505	92.12	6.56	1.32
U1525	90.23	8.05	1.72
U1625	92.52	6.08	1.4
U1715	94.31	4.43	1.26
Average	92.11	6.43	1.46

described in Appendix B. On the basis of the statistical analysis, the following generalizations regarding concentrations in the process streams and bench-scale samples, respectively, can be made:

- a. Underflow = sand
- b. Overflow = silt/clay for zinc, oil and grease, and TRPH
- c. Overflow < silt/clay for all other analytes except TOC
- d. Overflow > silt/clay for TOC
- e. Feed = bulk for all analytes except PCB 1260
- f. Feed > bulk for PCB 1260

The statistical power of the analysis for most analytes was less than 75. The power was greater than 75 for comparison of nickel in underflow and sand, and for PCB 1242 in feed and bulk for the one-tailed tests. Power was also greater than 75 for comparison of nickel and PCB 1260 in underflow and sand and for comparison of arsenic, chromium, nickel, barium, PCB 1242, PCB 1260, oil and grease, and TRPH in feed and bulk for the two-tailed tests.

<b>Table 6</b>		
<b>Percent Moisture and Percent Solids of Process Streams</b>		
<b>Sample</b>	<b>Percent Moisture</b>	<b>Percent Solids</b>
<b>Feed</b>		
F1400	94.08	5.92
F1505	98.53	1.47
F1525	98.18	1.82
F1625	98.53	1.47
F1715	98.19	1.81
Average	97.5	2.5
<b>Overflow</b>		
O1400	96.94	3.06
O1505	98.80	1.20
O1525	98.88	1.12
O1625	99.09	0.91
O1715	98.66	1.34
Average	98.5	1.5
<b>Underflow</b>		
U1400-3	19.84	80.16
U1505-3	24.77	75.23
U1525-3	24.59	75.41
U1625-3	19.69	80.31
U1715-3	20.62	79.38
Average	21.9	78.1

From a practical standpoint, it appears that the bench-scale characterization will give predicted concentrations at least within the same order of magnitude as the field process. In some cases, it is quite representative of the contaminant distribution that will be achieved at full scale for this process. From a processing objective, the statistical analysis suggests that the quality of the underflow was higher than the quality of the sand produced in the bench-scale testing, which is a favorable outcome. In some cases this may be attributable to lower concentrations in the process feed, but for other constituents this is not the case. SAS output is presented in Appendix B.

With regard to the processing objectives, the contaminant concentrations in the underflow ranged from 2 percent to 39 percent of that in the feed. PCBs were reduced 95 percent (Arochlor 1242) and 92 percent (Arochlor 1260), from 2,714 µg/kg to 144 µg/kg, and from 145 µg/kg to 11.9 µg/kg, respectively. TOC, oil and grease, and TRPH were significantly reduced in the process underflow. Most metals concentrations were reduced by an order of magnitude in the underflow, selenium, silver, and molybdenum being the exceptions. Selenium was reduced by a factor of 2.6, silver by a factor of 2.6, and molybdenum by a factor of 7.8.

Data validation sheets are included in Appendix C. Data were evaluated on the basis of representativeness, comparability, and completeness.

**Table 7**  
**Process Streams Chemical Analysis**

Analyte	Process Solids			Process Water			
	Feed	Overflow	Underflow	Supply	Feed Supernatant	Overflow Supernatant	Underflow Supernatant
Indicator Analytes							
TOC (mg/kg)	26,500 (27300)	46,480 (21100)	1019 (1435)				
TVS (%)	<4 (<4)	<4	<4				
O&G (mg/kg)	332 (220)	435 (475)	16 (43)				
TRPH (mg/kg)	259 (185)	338 (270)	<42.2 (10.5J)				
PCBs							
Arochlor 1242 (ppb)	2713.8 (3754.5)	4037.9 (5927.5)	144.0 (444)	<0.24	0.27	0.21	N/A
Arochlor 1260 (ppb)	145.0 (39)	109.9 (317.5)	11.9 (21.4)	<0.24	<0.24	<0.26	N/A
Metals							
As (ppm)	2.805 (2.2)	3.4 (5.05)	0.4883 (0.45)	0.005	0.0039	0.0041	N/A
Cd (ppm)	0.5809 (0.6045)	0.82 (1.355)	0.05908 (0.04)	<0.0002	<0.0002	<0.0002	N/A
Cr (ppm)	38.44 (29.8)	48.8 (79.95)	2.896 (3.05)	0.006	0.0046	0.0055	N/A
Cu (ppm)	37.81 (32.8)	50 (75.25)	3.386 (10.05)	0.003	0.0025	0.0021	N/A
Pb (ppm)	41.69 (43.7)	59.6 (101.2)	2.937 (5.6)	<0.001	<0.001	<0.001	N/A
Hg (ppm)	0.8834 (1.085)	1.3 (3.45)	<0.040 (0.02)	<0.00020	<0.00020	<0.00020	N/A
Ni (ppm)	15.718 (10.8)	19.0 (27.1)	2.578 (2.2)	0.014	0.0096	0.0093	N/A
Se (ppm)	0.5116 (0.4995)	0.65 (1.1)	0.2 (<0.200)	0.002	0.002	0.002	N/A
Ag (ppm)	0.3447 (0.4995)	0.53 (0.8995)	0.1333 (0.4)	<0.001	<0.001	<0.001	N/A
Zn (ppm)	81.4 (76.1)	116.9 (148.55)	5.431 (13.5)	0.046	0.0428	0.0396	N/A
Ba (ppm)	61.12 (42.85)	79.4 (104.5)	5.5052 (4.6)	0.108	0.1828	0.1769	N/A
Fe (ppm)	14251 (3822.4)	18010	1879	0.08	0.1304	0.0703	N/A
Mg (ppm)	15200	17740	N/A	75.6	76.85	78.19	N/A
Mn (ppm)	275.2 (140)	366.2 (325.5)	47.71 (44.25)	3.03	1.609	1.60	N/A
Mo (ppm)	0.7798 (0.3495)	0.40 (0.849)	0.1 (<0.100)	<0.001	0.003	0.0033	N/A

Note: Values in parentheses are for the bulk, fines, and sand fractions from bench-scale characterization.

Representativeness and comparability are qualitative criteria, and completeness is a quantitative criterion. Representativeness is a key concern during field sampling activities, and expresses the degree to which sample data accurately represent the site, specific matrices, and parameter variations at a sampling point. Representativeness is dependent on the proper design of the sampling program, proper selection of laboratory methods for the matrix under scrutiny, and stability of the laboratory methods. The representativeness criterion is best satisfied by making certain that the sampling locations, procedures, and quantities are selected based on the project objectives, and that suitable analytical procedures are utilized, preservation requirements are met, and holding times are not exceeded in the laboratory.

Comparability expresses the confidence with which one data set can be compared with another. The analysis of certified reference materials is used to provide data on comparability. The data obtained within this project will be comparable because all the standard operating procedures used in the determinations are based on methods with proven protocols and proven internal and external audit compliance relative to performance testing on certified reference material soils. All analyses of a single type will be conducted at the same laboratory. Completeness of the deliverable is measured for each set of data received by dividing the number of valid (passing quality assurance/quality control (QA/QC) requirements) measurements actually obtained by the number of measurements made. Each of the analytical parameters is evaluated separately in terms of precision, accuracy, and data acceptability. Precision pertains to the repeatability of the test, and is determined using a relative percent difference for duplicate samples and, for three or more replicate analysis, as a relative standard deviation or coefficient of variation. Most literature suggests that the goal for precision among field duplicates should be within 30 percent expressed as a relative percentage difference. Accuracy pertains to the closeness to the true value, and is evaluated using matrix spike recoveries expressed as a percent recovery. Completeness is then calculated on the basis of the number of samples meeting the established QA/QC requirements, as previously described. Acceptable completeness for a data set has been set at 90 percent meeting QA/QC requirements.

Completeness of the data was above 90 percent for all three data sets (Cells 4 and 5 characterization and field demonstration data). Some data were qualified due to minor problems. Corrective actions and data qualifications are detailed in the individual data validation sheets attached in Appendix C.

## **Equipment Acquisition**

On the basis of the performance of the 0.6-m (24-in.) MDS, a 0.3-m (12-in.) MDS was purchased for laboratory and field-scale feasibility testing. The capacity of the 0.3-m (12-in.) MDS is not sufficient for large-scale processing, but is better suited for feasibility testing because the volumes of process water required are more manageable, and the supporting equipment is correspondingly smaller and more widely available. A vibrating wet screen was also purchased for screening out oversize prior to the sump of the hydrocyclone, and fitted with 13-mm (1/2-in.) and 6-mm (1/4-in.) screens. Either dry or slurried material can



be fed onto the screen. The screen was ordered with excess capacity so that it could also be used with full-scale processing operations.

### 3 Conclusions

---

The principal objectives of the project were to evaluate the efficiency of the 0.6-m (24-in.) MDS in producing a sand fraction with fines and PCB concentrations sufficiently reduced to permit beneficial use, and to evaluate the correspondence of contaminant levels predicted by bench-scale testing versus field-scale operation. The target product (sand) specifications were less than 10 percent fines by mass and PCB concentrations less than 1 mg/kg. The underflow fraction produced averaged over 92 percent sand, as measured by a Coulter counter, and 0.144 mg/kg PCB 1242 and 0.0119 mg/kg PCB 1260. Based on statistical analysis of the results, the contaminant concentrations predicted for the sand fraction by the bench-scale testing were essentially equivalent to that achieved in the field operation. This is particularly significant since the process feed concentration of PCB 1260 was statistically greater than the bulk sediment concentration for the bench-scale testing. This indicates a somewhat higher efficiency of PCB removal for the MDS compared with that of wet sieving of the material. This may be attributable to the presence of coarse organic particles, which would report with the sand on a wet sieve, but would report with the overflow of a hydrocyclone. This is supported by the higher TOC concentration measured in the process overflow compared with that of the silt/clay fraction of the bulk sediment used in bench-scale testing. Distribution of metals was somewhat more variable than for PCBs, but metals were reduced by an order of magnitude in the sand fraction, with the exception of selenium, silver, and molybdenum. Selenium, silver, and molybdenum were reduced by factors of 2.6 to 7.8. In the absence of specific criteria establishing acceptable levels of metal constituents, partitioning theory could be used to evaluate the magnitude of potential release of metals in the beneficial use environment. Predicted releases could then be compared with applicable water quality criteria and necessary dilutions estimated.

# References

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# **Appendix A**

## **Coulter Counter Particle Size Analysis, Cell 4 Material**

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# LS Particle Size Analyzer

Page 1

22 May 2002 11:10

## US Waterways Experiment Station

File name: C4b.\$av  
Operator: Susan Bailey  
Optical model: Fraunhofer  
LS 100Q Fluid Module

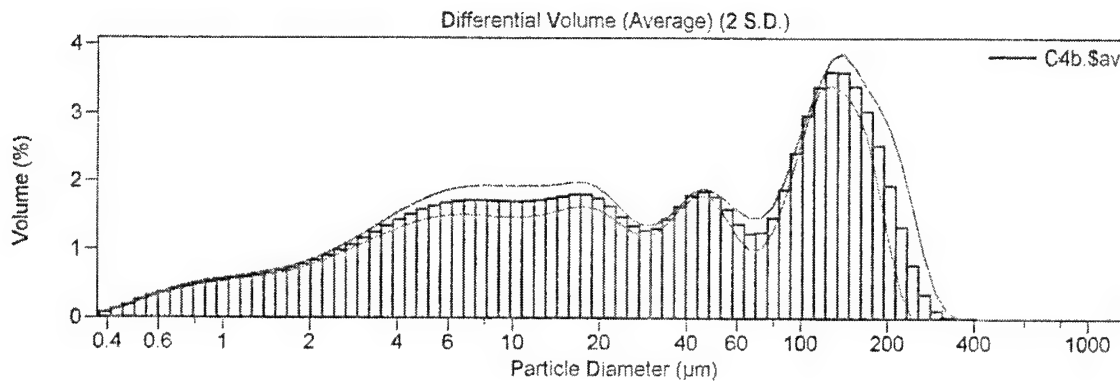
Run length: 60 seconds

Fluid: Water  
Software: 3.01 2.11

Firmware: 2.02 2.02

Average of 3 Files:

C4b1.\$av C4b2.\$av C4b3.\$av



### Volume Statistics (Arithmetic)

C4b.\$av

Calculations from 0.375 μm to 948.2 μm

Volume: 100%  
Mean: 59.32 μm S.D.: 65.88 μm  
Median: 25.95 μm C.V.: 111%  
D(3,2): 6.291 μm  
Mode: 127.6 μm

% <	10	25	50	75	90
μm	2.371	6.565	25.95	107.9	161.7



# LS Particle Size Analyzer

Page 2

22 May 2002 11:13

## US Waterways Experiment Station

C4b.\$av

Channel Number	Particle Diameter (Lower) µm	Cum. < Volume %	Channel Number	Particle Diameter (Lower) µm	Cum. < Volume %
1	0.375	0	51	39.77	56.4
2	0.412	0.070	52	43.66	58.2
3	0.452	0.19	53	47.93	60.0
4	0.496	0.38	54	52.63	61.8
5	0.545	0.64	55	57.77	63.4
6	0.598	0.96	56	63.41	64.7
7	0.657	1.33	57	69.62	66.0
8	0.721	1.75	58	76.43	67.2
9	0.791	2.22	59	83.90	68.7
10	0.869	2.72	60	92.09	70.6
11	0.953	3.25	61	101.1	73.0
12	1.047	3.81	62	111.0	75.9
13	1.149	4.38	63	121.8	79.3
14	1.261	4.98	64	133.7	82.9
15	1.385	5.61	65	146.8	86.5
16	1.520	6.27	66	161.2	89.9
17	1.669	6.95	67	176.8	92.9
18	1.832	7.69	68	194.2	95.5
19	2.010	8.47	69	213.2	97.4
20	2.207	9.31	70	234.1	98.7
21	2.423	10.2	71	256.8	99.5
22	2.660	11.2	72	282.1	99.9
23	2.920	12.3	73	309.6	99.97
24	3.206	13.4	74	339.8	99.997
25	3.519	14.7	75	373.1	100
26	3.862	16.0	76	409.6	100
27	4.241	17.5	77	449.7	100
28	4.656	19.0	78	493.6	100
29	5.111	20.5	79	541.9	100
30	5.611	22.2	80	594.9	100
31	6.158	23.9	81	653.0	100
32	6.761	25.6	82	716.9	100
33	7.421	27.3	83	786.9	100
34	8.147	29.0	84	863.9	100
35	8.944	30.7		948.2	100
36	9.819	32.4			
37	10.78	34.1			
38	11.83	35.8			
39	12.99	37.5			
40	14.26	39.2			
41	15.65	41.0			
42	17.18	42.8			
43	18.86	44.6			
44	20.70	46.3			
45	22.73	48.0			
46	24.95	49.4			
47	27.38	50.8			
48	30.07	52.1			
49	33.00	53.4			
50	36.24	54.8			



# LS Particle Size Analyzer

Page 1  
22 May 2002 11:13

## US Waterways Experiment Station

File name: C4b.\$av  
Operator: Susan Bailey  
Optical model: Fraunhofer  
LS 100Q Fluid Module

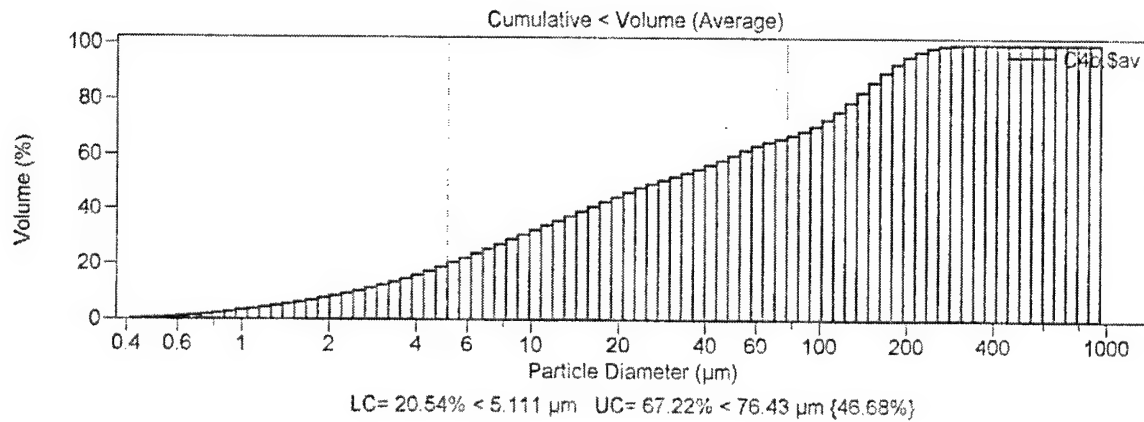
Run length: 60 seconds

Fluid: Water  
Software: 3.01 2.11

Firmware: 2.02 2.02

Average of 3 Files:

C4b1.\$av C4b2.\$av C4b3.\$av



### Volume Statistics (Arithmetic)

C4b.\$av

Calculations from 5.111 µm to 76.43 µm

Volume: 46.7%  
Mean: 25.13 µm S.D.: 18.77 µm  
Median: 18.19 µm C.V.: 74.7%  
D(3,2): 14.33 µm  
Mode: 45.75 µm

% <	10	25	50	75	90
µm	6.639	9.729	18.19	37.89	55.08





# LS Particle Size Analyzer

Page 2

22 May 2002 11:05

## US Waterways Experiment Station

C4b.\$av

Channel Number	Particle Diameter (Lower) µm	Cum. < Volume %	Channel Number	Particle Diameter (Lower) µm	Cum. < Volume %
1	0.375	0	51	39.77	56.4
2	0.412	0.070	52	43.66	58.2
3	0.452	0.19	53	47.93	60.0
4	0.496	0.38	54	52.63	61.8
5	0.545	0.64	55	57.77	63.4
6	0.598	0.96	56	63.41	64.7
7	0.657	1.33	57	69.62	66.0
8	0.721	1.75	58	76.43	67.2
9	0.791	2.22	59	83.90	68.7
10	0.869	2.72	60	92.09	70.6
11	0.953	3.25	61	101.1	73.0
12	1.047	3.81	62	111.0	75.9
13	1.149	4.38	63	121.8	79.3
14	1.261	4.98	64	133.7	82.9
15	1.385	5.61	65	146.8	86.5
16	1.520	6.27	66	161.2	89.9
17	1.669	6.95	67	176.8	92.9
18	1.832	7.69	68	194.2	95.5
19	2.010	8.47	69	213.2	97.4
20	2.207	9.31	70	234.1	98.7
21	2.423	10.2	71	256.8	99.5
22	2.660	11.2	72	282.1	99.9
23	2.920	12.3	73	309.6	99.97
24	3.206	13.4	74	339.8	99.997
25	3.519	14.7	75	373.1	100
26	3.862	16.0	76	409.6	100
27	4.241	17.5	77	449.7	100
28	4.656	19.0	78	493.6	100
29	5.111	20.5	79	541.9	100
30	5.611	22.2	80	594.9	100
31	6.158	23.9	81	653.0	100
32	6.761	25.6	82	716.9	100
33	7.421	27.3	83	786.9	100
34	8.147	29.0	84	863.9	100
35	8.944	30.7		948.2	100
36	9.819	32.4			
37	10.78	34.1			
38	11.83	35.8			
39	12.99	37.5			
40	14.26	39.2			
41	15.65	41.0			
42	17.18	42.8			
43	18.86	44.6			
44	20.70	46.3			
45	22.73	48.0			
46	24.95	49.4			
47	27.38	50.8			
48	30.07	52.1			
49	33.00	53.4			
50	36.24	54.8			



## LS Particle Size Analyzer

Page 1

22 May 2002 11:20

### US Waterways Experiment Station

File name: C4b.\$av  
Operator: Susan Bailey  
Optical model: Fraunhofer  
LS 100Q Fluid Module

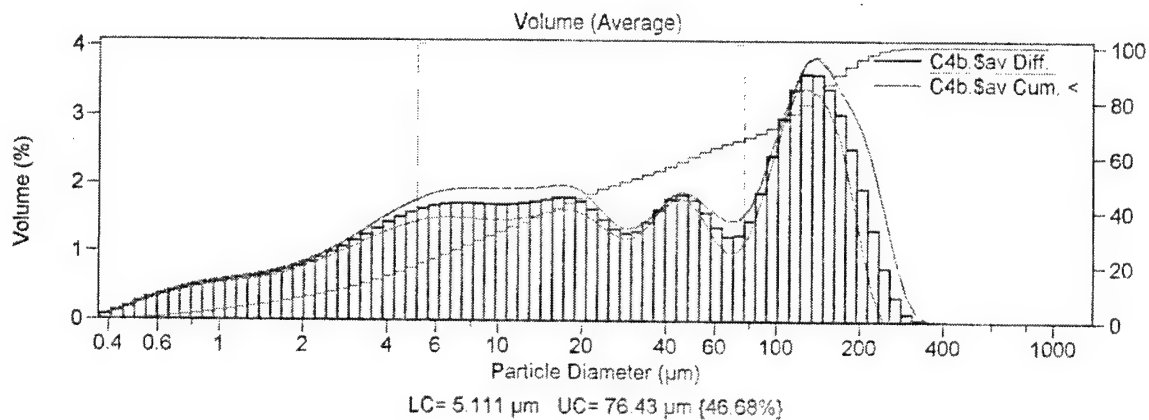
Run length: 60 seconds

Fluid: Water  
Software: 3.01 2.11

Firmware: 2.02 2.02

Average of 3 Files:

C4b1.\$av C4b2.\$av C4b3.\$av



# **Appendix B**

## **Statistical Analysis of Results**

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## Statistical Procedures, Assumptions and Analysis

**Step (A).** Evaluate the equality of variance assumption using the folded form of the F statistic (Snedecor and Cochran 1980).<sup>1</sup> The null hypothesis is that the variance of group 1 is equal to the group 2 variance. The alternative hypothesis is that the variance of group 1 is not equal to the group 2 variance. These results are shown in Tables B3, B6, and B9. If probability  $Pr > F$  is less than 0.05, the null hypothesis was rejected.

**Step (B).** If the equality of variance hypothesis is not rejected, the test statistic was calculated using a pooled estimate of the variance. If the equality of variance hypothesis is rejected, a test statistic that assumes unequal population variances was utilized (Snedecor and Cochran 1980). These results are shown in Tables B2, B5, and B8. The respective hypotheses were expressed as  $H_0: \mu_{\text{Feed}} \leq \mu_{\text{Bulk}}$  and  $H_A: \mu_{\text{Feed}} > \mu_{\text{Bulk}}$ ;  $H_0: \mu_{\text{Underflow}} \leq \mu_{\text{Sand}}$  and  $H_A: \mu_{\text{Underflow}} > \mu_{\text{Sand}}$ ;  $H_0: \mu_{\text{Overflow}} \leq \mu_{\text{Silt/Clay}}$  and  $H_A: \mu_{\text{Overflow}} > \mu_{\text{Silt/Clay}}$ . The one-tailed t-test was conducted at  $\alpha=0.05$ . For a one-tailed t-test halve the  $\text{Prob} > |T|$  value. Reject the null hypothesis if half the  $\text{Prob} > |T|$  is less than 0.05.

From the underflow and sand data one would conclude that the underflow mean concentrations are less than or equal to the sand mean concentrations (Table B2). For the current experimental design, the mean comparison for nickel was the only comparison with a power greater than 0.75. From the overflow and silt/clay data one would conclude that the arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc, barium, PCB 1242, PCB 1260, oil and grease, and TRPH overflow mean concentrations are less than or equal to the silt/clay mean concentrations and the TOC overflow mean concentration is greater than the silt/clay mean concentration (Table B5). For the current experimental design, the TOC and TRPH comparisons were the only comparisons with a power greater than 0.75. From the feed and bulk data one would conclude that the arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc, barium, PCB 1242, TOC, oil and grease, and TRPH feed mean concentrations are less than or equal to the bulk mean concentrations and the PCB 1260 feed mean concentration is greater than the bulk mean concentration (Table B8). For the current experimental design, the PCB 1242 comparison was the only comparison with a power greater than 0.75.

An alternate way to write the respective hypotheses was  $H_0: \mu_{\text{Feed}} = \mu_{\text{Bulk}}$  and  $H_A: \mu_{\text{Feed}} \neq \mu_{\text{Bulk}}$ ;  $H_0: \mu_{\text{Underflow}} = \mu_{\text{Sand}}$  and  $H_A: \mu_{\text{Underflow}} \neq \mu_{\text{Sand}}$ ;  $H_0: \mu_{\text{Overflow}} = \mu_{\text{Silt/Clay}}$  and  $H_A: \mu_{\text{Overflow}} \neq \mu_{\text{Silt/Clay}}$ . Reject the null hypothesis if the  $\text{Prob} > |T|$  is less than 0.05.

From the underflow and sand data one would conclude that the underflow mean concentrations are equal to the sand mean concentrations (Table B2). For the current experimental design, the nickel and PCB 1260 comparisons were the

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<sup>1</sup> References cited in this appendix are included in the References section at the end of the main text.

only comparisons with a power greater than 0.75. From the overflow and silt/clay data one would conclude that the zinc, oil and grease, and TRPH overflow mean concentrations are equal to the silt/clay mean concentrations and the arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, barium, TOC, PCB 1242, and PCB 1260 overflow mean concentrations are not equal to the silt/clay mean concentrations (Table B5). For the current experimental design, the power of the comparison for arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, barium, PCB 1242, PCB 1260, and TOC was greater than 0.75. From the feed and bulk data one would conclude that the arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc, barium, TOC, oil and grease, and TRPH feed mean concentrations are equal to the bulk mean concentrations and the PCB 1242 and PCB 1260 feed mean concentrations are not equal to the bulk mean concentrations (Table B8). For the current experimental design, the power of the comparison for arsenic, chromium, nickel, barium, PCB 1242, PCB 1260, oil and grease, and TRPH was greater than 0.75.

**Table B1**  
**Sand and Underflow Summary**

Variable	TYPE	N	Lower CL		Upper CL		Lower CL		Upper CL	
			Mean	Mean	Mean	Mean	Std Dev	Std Dev	Std Dev	Std Err
AS	SAND	2	-0.185	0.45	1.0853	0.0315	0.0707	2.2564	0.05	
AS	UNDERFLOW	10	0.4376	0.4883	0.539	0.0487	0.0709	0.1294	0.0224	
AS	Diff (1-2)		-0.161	-0.038	0.084	0.0495	0.0709	0.1243	0.0549	
CD	SAND	2	-0.087	0.04	0.1671	0.0063	0.0141	0.4513	0.01	
CD	UNDERFLOW	10	-0.002	0.0591	0.12	0.0586	0.0851	0.1554	0.0269	
CD	Diff (1-2)		-0.159	-0.019	0.1205	0.0565	0.0809	0.1419	0.0626	
CR	SAND	2	-2.668	3.05	8.7678	0.2839	0.6364	20.308	0.45	
CR	UNDERFLOW	10	2.4997	2.896	3.2923	0.3811	0.554	1.0114	0.1752	
CR	Diff (1-2)		-0.817	0.154	1.1253	0.3932	0.5628	0.9876	0.4359	
CU	SAND	2	-71.91	10.05	92.005	4.0696	9.1217	291.07	6.45	
CU	UNDERFLOW	10	2.0019	3.386	4.7701	1.3309	1.9349	3.5324	0.6119	
CU	Diff (1-2)		0.763	6.664	12.565	2.389	3.4191	6.0002	2.6484	
PB	SAND	2	-26.17	5.6	37.366	1.5774	3.5355	112.82	2.5	
PB	UNDERFLOW	10	2.2494	2.937	3.6246	0.6611	0.9612	1.7547	0.3039	
PB	Diff (1-2)		0.173	2.663	5.153	1.0081	1.4427	2.5319	1.1175	
HG	SAND	2	-0.097	0.03	0.1571	0.0063	0.0141	0.4513	0.01	
HG	UNDERFLOW	10	0.02	0.02	0.02	.	0	.	0	
HG	Diff (1-2)		0.0023	0.01	0.0177	0.0031	0.0045	0.0078	0.0035	
NI	SAND	2	-1.612	2.2	6.0119	0.1893	0.4243	13.538	0.3	
NI	UNDERFLOW	10	2.1989	2.578	2.9571	0.3645	0.5299	0.9674	0.1676	
NI	Diff (1-2)		-1.276	-0.378	0.52	0.3636	0.5203	0.9131	0.403	
SE	SAND	2	0.1	0.1	0.1	.	0	.	0	
SE	UNDERFLOW	10	0.1	0.1	0.1	.	0	.	0	
SE	Diff (1-2)		.	0	.	.	0	.	.	
AG	SAND	2	-0.871	0.4	1.6706	0.0631	0.1414	4.5128	0.1	
AG	UNDERFLOW	10	0.0615	0.08	0.0985	0.0178	0.0258	0.0471	0.0082	
AG	Diff (1-2)		0.232	0.32	0.408	0.0356	0.051	0.0895	0.0395	
ZN	SAND	2	-8.101	13.5	35.101	1.0726	2.4042	76.717	1.7	
ZN	UNDERFLOW	10	4.9366	5.431	5.9254	0.4754	0.6912	1.2618	0.2186	
ZN	Diff (1-2)		6.3362	8.069	9.8018	0.7015	1.004	1.7619	0.7777	
BA	SAND	2	-4.294	4.6	13.494	0.4417	0.9899	31.589	0.7	
BA	UNDERFLOW	10	3.7931	5.052	6.3109	1.2104	1.7598	3.2127	0.5565	
BA	Diff (1-2)		-3.384	-0.452	2.4796	1.1868	1.6986	2.9809	1.3157	
pcb_1242	SAND	2	-559.8	444	1447.8	49.845	111.72	3565.1	79	
pcb_1242	UNDERFLOW	10	126.31	144.03	161.75	17.035	24.767	45.214	7.8319	
pcb_1242	Diff (1-2)		226.74	299.97	373.2	29.646	42.429	74.461	32.866	
pcb_1260	SAND	2	-71.36	21.4	114.16	4.6059	10.324	329.43	7.3	
pcb_1260	UNDERFLOW	10	8.3325	11.91	15.487	3.4399	5.001	9.1298	1.5814	
pcb_1260	Diff (1-2)		-0.45	9.49	19.43	4.024	5.7591	10.107	4.461	
toc	SAND	2	-788.6	1435	3658.6	110.42	247.49	7897.4	175	
toc	UNDERFLOW	10	539.92	1019	1498.1	460.65	669.71	1222.6	211.78	
toc	Diff (1-2)		-688.8	416	1520.8	447.28	640.14	1123.4	495.85	
OG	SAND	2	-122.2	43	208.18	8.2024	18.385	586.66	13	
OG	UNDERFLOW	10	14.003	17.55	21.097	3.4102	4.9579	9.0512	1.5678	
OG	Diff (1-2)		12.543	25.45	38.357	5.2251	7.4781	13.124	5.7925	
TRPH	SAND	2	-97.5	10.5	118.5	5.3631	12.021	383.59	8.5	
TRPH	UNDERFLOW	10	20.058	20.85	21.642	0.7613	1.1068	2.0206	0.35	
TRPH	Diff (1-2)		-17.16	-10.35	-3.544	2.7555	3.9437	6.9209	3.0548	

**Table B2**  
**Sand and Underflow T-Test Results**

Variable	Method	Variances	DF	t Value	Pr >  t
AS	Pooled	Equal	10	-0.70	0.5012
AS	Satterthwaite	Unequal	1.44	-0.70	0.5803
CD	Pooled	Equal	10	-0.30	0.7669
CD	Satterthwaite	Unequal	9.95	-0.66	0.5215
CR	Pooled	Equal	10	0.35	0.7312
CR	Satterthwaite	Unequal	1.32	0.32	0.7928
CU	Pooled	Equal	10	2.52	0.0306
CU	Satterthwaite	Unequal	1.02	1.03	0.4886
PB	Pooled	Equal	10	2.38	0.0384
PB	Satterthwaite	Unequal	1.03	1.06	0.4782
HG	Pooled	Equal	10	2.89	0.0162
HG	Satterthwaite	Unequal	1	1.00	0.5000
NI	Pooled	Equal	10	-0.94	0.3704
NI	Satterthwaite	Unequal	1.7	-1.10	0.4026
SE	Pooled	Equal	10	.	.
SE	Satterthwaite	Unequal	10	.	.
AG	Pooled	Equal	10	8.10	<.0001
AG	Satterthwaite	Unequal	1.01	3.19	0.1908
ZN	Pooled	Equal	10	10.38	<.0001
ZN	Satterthwaite	Unequal	1.03	4.71	0.1273
BA	Pooled	Equal	10	-0.34	0.7383
BA	Satterthwaite	Unequal	2.55	-0.51	0.6536
pcb_1242	Pooled	Equal	10	9.13	<.0001
pcb_1242	Satterthwaite	Unequal	1.02	3.78	0.1609
pcb_1260	Pooled	Equal	10	2.13	0.0593
pcb_1260	Satterthwaite	Unequal	1.1	1.27	0.4103
toc	Pooled	Equal	10	0.84	0.4211
toc	Satterthwaite	Unequal	4.9	1.51	0.1915
OG	Pooled	Equal	10	4.39	0.0013
OG	Satterthwaite	Unequal	1.03	1.94	0.2970
TRPH	Pooled	Equal	10	-3.39	0.0069
TRPH	Satterthwaite	Unequal	1	-1.22	0.4375

**Table B3**  
**Sand and Underflow Equality of Variances Test Results**

Variable	Method	Num DF	Den DF	F Value	Pr > F
AS	Folded F	9	1	1.00	1.0000
CD	Folded F	9	1	36.23	0.2566
CR	Folded F	1	9	1.32	0.5606
CU	Folded F	1	9	22.22	0.0022
PB	Folded F	1	9	13.53	0.0102
HG	Folded F	1	9	Infty	<.0001
NI	Folded F	9	1	1.56	1.0000
SE	Folded F	1	9	.	.
AG	Folded F	1	9	30.00	0.0008
ZN	Folded F	1	9	12.10	0.0139
BA	Folded F	9	1	3.16	0.8250
pcb_1242	Folded F	1	9	20.35	0.0029
pcb_1260	Folded F	1	9	4.26	0.1380
toc	Folded F	9	1	7.32	0.5595
OG	Folded F	1	9	13.75	0.0097
TRPH	Folded F	1	9	117.96	<.0001

**Table B4**  
**Fines (Silt/Clay) and Overflow Summary**

Variable	TYPE	N	Lower CL Mean	Mean	Upper CL Mean	Lower CL Std Dev	Std Dev	Upper CL Std Dev	Std Err
AS	FINES	2	4.4147	5.05	5.6853	0.0315	0.0707	2.2564	0.05
AS	OVERFLOW	10	3.1251	3.445	3.7649	0.3076	0.4472	0.8165	0.1414
AS	Diff (1-2)		0.8717	1.605	2.3383	0.2969	0.4249	0.7456	0.3291
CD	FINES	2	0.6562	1.355	2.0538	0.0347	0.0778	2.482	0.055
CD	OVERFLOW	10	0.7471	0.8208	0.8945	0.0709	0.1031	0.1882	0.0326
CD	Diff (1-2)		0.3602	0.5342	0.7082	0.0705	0.1008	0.177	0.0781
CR	FINES	2	50.09	79.95	109.81	1.4827	3.3234	106.05	2.35
CR	OVERFLOW	10	43.629	48.75	53.871	4.9243	7.1592	13.07	2.2639
CR	Diff (1-2)		19.338	31.2	43.062	4.802	6.8726	12.061	5.3235
CU	FINES	2	55.555	75.25	94.945	0.978	2.192	69.948	1.55
CU	OVERFLOW	10	46.111	50	53.889	3.7398	5.4371	9.9261	1.7194
CU	Diff (1-2)		16.268	25.25	34.232	3.6365	5.2045	9.1335	4.0314
PB	FINES	2	65.623	101.2	136.78	1.7667	3.9598	126.36	2.8
PB	OVERFLOW	10	54.371	59.59	64.809	5.0183	7.2957	13.319	2.3071
PB	Diff (1-2)		29.47	41.61	53.75	4.9146	7.0337	12.344	5.4483
HG	FINES	2	3.3229	3.45	3.5771	0.0063	0.0141	0.4513	0.01
HG	OVERFLOW	10	1.1581	1.294	1.4299	0.1307	0.19	0.3468	0.0601
HG	Diff (1-2)		1.8448	2.156	2.4672	0.126	0.1803	0.3164	0.1397
NI	FINES	2	20.747	27.1	33.453	0.3155	0.7071	22.564	0.5
NI	OVERFLOW	10	17.502	18.98	20.458	1.4207	2.0655	3.7708	0.6532
NI	Diff (1-2)		4.7162	8.12	11.524	1.378	1.9722	3.4611	1.5277
SE	FINES	2	-0.171	1.1	2.3706	0.0631	0.1414	4.5128	0.1
SE	OVERFLOW	10	0.5579	0.6489	0.7399	0.0875	0.1272	0.2321	0.0402
SE	Diff (1-2)		0.2291	0.4511	0.6731	0.0899	0.1287	0.2258	0.0997
AG	FINES	2	-0.377	0.8995	2.1765	0.0634	0.1421	4.5353	0.1005
AG	OVERFLOW	10	0.4538	0.5292	0.6046	0.0725	0.1055	0.1925	0.0333
AG	Diff (1-2)		0.181	0.3703	0.5596	0.0766	0.1097	0.1925	0.085
ZN	FINES	2	-1699	148.56	1996.6	91.769	205.69	6563.6	145.45
ZN	OVERFLOW	10	106.52	116.94	127.36	10.022	14.57	26.599	4.6074
ZN	Diff (1-2)		-83.15	31.615	146.38	46.463	66.497	116.7	51.509
BA	FINES	2	72.734	104.5	136.27	1.5774	3.5355	112.82	2.5
BA	OVERFLOW	10	71.968	79.35	86.732	7.0976	10.319	18.838	3.2631
BA	Diff (1-2)		8.1449	25.15	42.155	6.8843	9.8528	17.291	7.632
pcb_1242	FINES	2	4345.6	5927.5	7509.4	78.553	176.07	5618.4	124.5
pcb_1242	OVERFLOW	10	3642.6	4037.9	4433.2	380.1	552.61	1008.8	174.75
pcb_1242	Diff (1-2)		979.7	1889.6	2799.5	368.36	527.2	925.2	408.37
pcb_1260	FINES	2	298.44	317.5	336.56	0.9464	2.1213	67.692	1.5
pcb_1260	OVERFLOW	10	92.963	109.9	126.84	16.285	23.676	43.224	7.4871
pcb_1260	Diff (1-2)		168.82	207.6	246.38	15.701	22.471	39.436	17.406
toc	FINES	2	-66573	21100	108773	4353.6	9758.1	311382	6900
toc	OVERFLOW	10	42701	46480	50259	3633.9	5283.1	9644.8	1670.6
toc	Diff (1-2)		-35538	-25380	-15222	4112.4	5885.7	10329	4559.1
OG	FINES	2	-859.2	475	1809.2	66.25	148.49	4738.4	105
OG	OVERFLOW	10	351.08	435	518.92	80.688	117.31	214.16	37.096
OG	Diff (1-2)		-168.5	40	248.47	84.397	120.79	211.98	93.563
TRPH	FINES	2	-619.4	270	1159.4	44.167	98.995	3158.9	70
TRPH	OVERFLOW	10	271.76	338	404.24	63.688	92.592	169.04	29.28
TRPH	Diff (1-2)		-228.9	-68	92.945	65.157	93.252	163.65	72.233



**Table B5**  
**Fines (Silt/Clay) and Overflow T-Test Results**

Variable	Method	Variances	DF	t Value	Pr >  t
AS	Pooled	Equal	10	4.88	0.0006
AS	Satterthwaite	Unequal	9.99	10.70	<.0001
CD	Pooled	Equal	10	6.84	<.0001
CD	Satterthwaite	Unequal	1.8	8.36	0.0190
CR	Pooled	Equal	10	5.86	0.0002
CR	Satterthwaite	Unequal	3.39	9.56	0.0014
CU	Pooled	Equal	10	6.26	<.0001
CU	Satterthwaite	Unequal	4.26	10.91	0.0003
PB	Pooled	Equal	10	7.64	<.0001
PB	Satterthwaite	Unequal	2.68	11.47	0.0024
HG	Pooled	Equal	10	15.44	<.0001
HG	Satterthwaite	Unequal	9.44	35.40	<.0001
NI	Pooled	Equal	10	5.32	0.0003
NI	Satterthwaite	Unequal	5.53	9.87	0.0001
SE	Pooled	Equal	10	4.53	0.0011
SE	Satterthwaite	Unequal	1.35	4.19	0.0993
AG	Pooled	Equal	10	4.36	0.0014
AG	Satterthwaite	Unequal	1.23	3.50	0.1392
ZN	Pooled	Equal	10	0.61	0.5531
ZN	Satterthwaite	Unequal	1	0.22	0.8638
BA	Pooled	Equal	10	3.30	0.0081
BA	Satterthwaite	Unequal	5.53	6.12	0.0012
pcb_1242	Pooled	Equal	10	4.63	0.0009
pcb_1242	Satterthwaite	Unequal	6.16	8.81	0.0001
pcb_1260	Pooled	Equal	10	11.93	<.0001
pcb_1260	Satterthwaite	Unequal	9.6	27.19	<.0001
toc	Pooled	Equal	10	-5.57	0.0002
toc	Satterthwaite	Unequal	1.12	-3.57	0.1521
OG	Pooled	Equal	10	0.43	0.6781
OG	Satterthwaite	Unequal	1.26	0.36	0.7702
TRPH	Pooled	Equal	10	-0.94	0.3687
TRPH	Satterthwaite	Unequal	1.38	-0.90	0.4992

**Table B6**  
**Fines (Silt/Clay) and Overflow Equality of Variances Test Results**

Variable	Method	Num DF	Den DF	F Value	Pr > F
AS	Folded F	9	1	40.01	0.2443
CD	Folded F	9	1	1.76	1.0000
CR	Folded F	9	1	4.64	0.6930
CU	Folded F	9	1	6.15	0.6075
PB	Folded F	9	1	3.39	0.7990
HG	Folded F	9	1	180.47	0.1154
NI	Folded F	9	1	8.53	0.5201
SE	Folded F	1	9	1.24	0.5897
AG	Folded F	1	9	1.82	0.4214
ZN	Folded F	1	9	199.30	<.0001
BA	Folded F	9	1	8.52	0.5205
pcb_1242	Folded F	9	1	9.85	0.4854
pcb_1260	Folded F	9	1	124.57	0.1389
toc	Folded F	1	9	3.41	0.1956
OG	Folded F	1	9	1.60	0.4747
TRPH	Folded F	1	9	1.14	0.6257

**Table B7**  
**Bulk and Feed Summary**

Variable	TYPE	N	Lower CL Mean	Mean	Upper CL Mean	Lower CL Std Dev	Std Dev	Upper CL Std Dev	Std Err
AS	BULK	2	0.9294	2.2	3.4706	0.0631	0.1414	4.5128	0.1
AS	FEED	10	2.1377	2.805	3.4723	0.6416	0.9328	1.7028	0.295
AS	Diff (1-2)		-2.134	-0.605	0.9242	0.6191	0.886	1.5549	0.6863
CD	BULK	2	0.5473	0.6045	0.6617	0.0028	0.0064	0.2031	0.0045
CD	FEED	10	0.4583	0.5809	0.7035	0.1179	0.1714	0.3128	0.0542
CD	Diff (1-2)		-0.257	0.0236	0.3042	0.1136	0.1626	0.2853	0.1259
CR	BULK	2	18.364	29.8	41.236	0.5679	1.2728	40.615	0.9
CR	FEED	10	29.449	38.44	47.431	8.6451	12.569	22.945	3.9745
CR	Diff (1-2)		-29.23	-8.64	11.951	8.336	11.93	20.937	9.2412
CU	BULK	2	-37.08	32.8	102.68	3.4702	7.7782	248.2	5.5
CU	FEED	10	28.542	37.81	47.078	8.9111	12.955	23.651	4.0968
CU	Diff (1-2)		-26.64	-5.01	16.623	8.7579	12.534	21.997	9.709
PB	BULK	2	33.535	43.7	53.865	0.5048	1.1314	36.102	0.8
PB	FEED	10	32.818	41.69	50.562	8.5304	12.402	22.641	3.9218
PB	Diff (1-2)		-18.31	2.01	22.325	8.2244	11.771	20.657	9.1176
HG	BULK	2	1.0215	1.085	1.1485	0.0032	0.0071	0.2256	0.005
HG	FEED	10	0.6547	0.8834	1.1121	0.2199	0.3198	0.5838	0.1011
HG	Diff (1-2)		-0.322	0.2016	0.7252	0.212	0.3034	0.5324	0.235
NI	BULK	2	4.4469	10.8	17.153	0.3155	0.7071	22.564	0.5
NI	FEED	10	12.387	15.718	19.049	3.203	4.6566	8.5012	1.4726
NI	Diff (1-2)		-12.55	-4.918	2.7162	3.0906	4.4233	7.7626	3.4263
SE	BULK	2	0.4931	0.4995	0.5059	0.0003	0.0007	0.0226	0.0005
SE	FEED	10	0.3762	0.5116	0.647	0.1302	0.1892	0.3455	0.0598
SE	Diff (1-2)		-0.322	-0.012	0.2977	0.1254	0.1795	0.315	0.1391
AG	BULK	2	-2.048	0.4995	3.0471	0.1265	0.2835	9.0481	0.2005
AG	FEED	10	0.2617	0.3447	0.4277	0.0798	0.116	0.2117	0.0367
AG	Diff (1-2)		-0.09	0.1548	0.3997	0.0992	0.1419	0.2491	0.1099
ZN	BULK	2	49.417	76.1	102.78	1.325	2.9698	94.768	2.1
ZN	FEED	10	62.753	81.4	100.05	17.93	26.067	47.589	8.2432
ZN	Diff (1-2)		-48.01	-5.3	37.412	17.291	24.747	43.43	19.169
BA	BULK	2	12.99	42.85	72.71	1.4827	3.3234	106.05	2.35
BA	FEED	10	46.266	61.12	75.974	14.283	20.765	37.908	6.5664
BA	Diff (1-2)		-52.32	-18.27	15.777	13.784	19.727	34.62	15.281
pcb_1242	BULK	2	3341.5	3754.5	4167.5	20.506	45.962	1466.7	32.5
pcb_1242	FEED	10	2356	2713.8	3071.6	344.04	500.17	913.12	158.17
pcb_1242	Diff (1-2)		221.36	1040.7	1860	331.7	474.73	833.12	367.72
pcb_1260	BULK	2	2.152	39	75.848	1.8298	4.1012	130.87	2.9
pcb_1260	FEED	10	114.55	144.96	175.37	29.245	42.517	77.62	13.445
pcb_1260	Diff (1-2)		-175.6	-106	-36.31	28.198	40.356	70.822	31.26
toc	BULK	2	12053	27300	42547	757.14	1697.1	54153	1200
toc	FEED	10	20471	26500	32529	5797	8427.9	15386	2665.1
toc	Diff (1-2)		-13030	800	14630	5599.1	8013.4	14063	6207.1
OG	BULK	2	92.938	220	347.06	6.3095	14.142	451.28	10
OG	FEED	10	270.85	332	393.15	58.795	85.479	156.05	27.031
OG	Diff (1-2)		-252.2	-112	28.171	56.747	81.216	142.53	62.909
TRPH	BULK	2	121.47	185	248.53	3.1548	7.0711	225.64	5
TRPH	FEED	10	209.04	259	308.96	48.034	69.833	127.49	22.083
TRPH	Diff (1-2)		-188.4	-74	40.406	46.316	66.287	116.33	51.346

**Table B8**  
**Bulk and Feed T-Test Results**

Variable	Method	Variances	DF	t Value	Pr >  t
AS	Pooled	Equal	10	-0.88	0.3987
AS	Satterthwaite	Unequal	10	-1.94	0.0807
CD	Pooled	Equal	10	0.19	0.8551
CD	Satterthwaite	Unequal	9.12	0.43	0.6744
CR	Pooled	Equal	10	-0.93	0.3718
CR	Satterthwaite	Unequal	9.72	-2.12	0.0608
CU	Pooled	Equal	10	-0.52	0.6171
CU	Satterthwaite	Unequal	2.34	-0.73	0.5313
PB	Pooled	Equal	10	0.22	0.8300
PB	Satterthwaite	Unequal	9.61	0.50	0.6268
HG	Pooled	Equal	10	0.86	0.4110
HG	Satterthwaite	Unequal	9.04	1.99	0.0775
NI	Pooled	Equal	10	-1.44	0.1817
NI	Satterthwaite	Unequal	10	-3.16	0.0101
SE	Pooled	Equal	10	-0.09	0.9324
SE	Satterthwaite	Unequal	9	-0.20	0.8443
AG	Pooled	Equal	10	1.41	0.1894
AG	Satterthwaite	Unequal	1.07	0.76	0.5798
ZN	Pooled	Equal	10	-0.28	0.7878
ZN	Satterthwaite	Unequal	9.83	-0.62	0.5474
BA	Pooled	Equal	10	-1.20	0.2594
BA	Satterthwaite	Unequal	9.98	-2.62	0.0257
pcb_1242	Pooled	Equal	10	2.83	0.0178
pcb_1242	Satterthwaite	Unequal	9.62	6.45	<.0001
pcb_1260	Pooled	Equal	10	-3.39	0.0069
pcb_1260	Satterthwaite	Unequal	9.67	-7.70	<.0001
toc	Pooled	Equal	10	0.13	0.9000
toc	Satterthwaite	Unequal	9.5	0.27	0.7902
OG	Pooled	Equal	10	-1.78	0.1054
OG	Satterthwaite	Unequal	9.95	-3.89	0.0031
TRPH	Pooled	Equal	10	-1.44	0.1801
TRPH	Satterthwaite	Unequal	9.72	-3.27	0.0088

**Table B9**  
**Bulk and Feed Equality of Variances Test Results**

Variable	Method	Num DF	Den DF	F Value	Pr > F
AS	Folded F	9	1	43.50	0.2343
CD	Folded F	9	1	725.01	0.0576
CR	Folded F	9	1	97.51	0.1569
CU	Folded F	9	1	2.77	0.8739
PB	Folded F	9	1	120.16	0.1414
HG	Folded F	9	1	2044.94	0.0343
NI	Folded F	9	1	43.37	0.2347
SE	Folded F	9	1	71613.0	<.0001
AG	Folded F	1	9	5.98	0.0741
ZN	Folded F	9	1	77.04	0.1764
BA	Folded F	9	1	39.04	0.2472
pcb_1242	Folded F	9	1	118.42	0.1424
pcb_1260	Folded F	9	1	107.47	0.1495
toc	Folded F	9	1	24.66	0.3102
OG	Folded F	9	1	36.53	0.2555
TRPH	Folded F	9	1	97.53	0.1569

# **Appendix C**

## **Chemical Analysis Sample Listing, Data Validation, Raw Data Sheets**

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<b>Table C1</b>					
<b>Green Bay Physical Separation Samples - ECB Lab ID #s</b>					
<b>Sample/Analyte</b>	<b>TOC/TVS/O&amp;G/TRPH</b>	<b>PCBs</b>	<b>PAHs</b>	<b>Metals</b>	<b>Soot</b>
<b>Demo</b>					
GB Underflow 1400-1715 (-1, -2) (solids)	90838-47	90808-17	N/A	90823-32	
GB Feed 1400-1715-1 (solids)	90848-52	90818-22	N/A	90833-37	
GB Feed 1400-1715-2 (solids)	90954-58	90924-28	N/A	90939-43	
GB Overflow 1400-1715 (-1, -2) (solids)	90944-53	90914-23	N/A	90929-38	
GB Overflow 1400-1715 -1 (supernatant)		90853-57	N/A	90904,6,8,10,12	
GB Overflow 1400-1715 -2 (supernatant)		90883-87	N/A	90905,7,9,11,13	
GB Feed 1400-1715 -1 (supernatant)		90858-62	N/A	90894,6,8,900,02	
GB Feed 1400-1715 -2 (supernatant)		90888-92	N/A	90895,7,9,901,03	
Supply Water		90789	N/A	90893	
MetPro Underflow	92103-4	92099-100	N/A	92107-8	
MetPro Overflow	92105-6	92101-2	N/A	92109-10	
MetPro Underflow Supernatant		92111	N/A	92113	
MetPro Overflow Supernatant		92112	N/A	92114	
Soot Samples					92455-514
Carbon Treated Supernatant		92412	N/A	92413	
<b>Cell 4 Characterization</b>					
Cell 4, Bulk A,B	89589-90	89587-88	89591-92	89585-6	90795-802
Cell 4 Sand 1,2	93027-28	93023-24	N/A	93019-20	
Silt/Clay 1,2	93029-30	93025-26	N/A	93021-22	
Clay 1,2 Cell 4	94943-4	94940-1	N/A	94937-8	
Silt Cell 4	94945	94942	N/A	94939	
Soot Samples					89607-18
<b>Cell 5 Characterization</b>					
Bulk 1,2,3	89331-33	89343-45	89349-51	89337-39	
Bulk 4,5	89334-36	89346-48	89352-54	89340-42	
Bulk 1,2,3 <75um	89375-76	89379-80	89383-84	89371-72	
Bulk 1,2,3 >75um	89377-78	89381-82	89385-86	89373-74	
Bulk 1,2,3 >2.0 sp.gr.	89729	89725	89727	89723	
Bulk 1,2,3 <2.0 sp.gr.	89730	89726	89728	89724	
Wastewater		96653		96652	

**Table C2**  
**Data Validation Summary**

Green Bay Physical Separation Samples - ECB Lab ID #s

Sample/Analyte	Metals	No. of Samples	No. of Analytes	Precision 1	Accuracy 2	Completeness 3	Total Tests 4
DEMO	GROUP TOTALS			99.9%	97.3%	97.1%	
				TESTS COMPLETED			
GB Underflow 1400-1715 (-1, -2) (solids)	90823-32	10	14	140	140	140	140
GB Feed 1400-1715-1 (solids)	90833-37	5	14	70	70	70	70
GB Feed 1400-1715-2 (solids)	90939-43	5	15	75	75	75	75
GB Overflow 1400-1715 (-1, -2) (solids)	90929-38	10	15	150	150	150	150
GB Overflow 1400-1715 -1 (supernatant)	90904,6,8,10,12						
GB Overflow 1400-1715 -2 (supernatant)	90905,7,9,11,13						
GB Feed 1400-1715 -1 (supernatant)	90894,6,8,900,02						
GB Feed 1400-1715 -2 (supernatant)	90895,7,9,901,03						
Supply Water	90893	21	15	315	294	294	315
Carbon Treated Supernatant	92413	1	14	13	14	13	14
	GROUP SUM			763	743		764
CELL 4 CHARACTERIZATION					100.0%	92.1%	
				TESTS COMPLETED			
Cell 4, Bulk A,B	89585-6	2	15	28	30	28	30
Cell 4 Sand 1,2	93019-20	2	13	22	26	22	26
Silt/Clay 1,2	93021-22	2	13	22	26	22	26
Clay 1,2 Cell 4	94937-38	2	15	30	30	30	30
Silt Cell 4	94939	1	15	15	15	15	15
	GROUP SUM			117		117	127

**Table C2 (Concluded)**

Green Bay Physical Separation Samples - ECB Lab ID #s									
Sample/Analyte	Metals	No. of Samples	No. of Analytes	Precision 1	Accuracy 2	Completeness 3	Total Tests 4		
CELL 5 CHARACTERIZATION	GROUP TOTALS			97.6%	100.0% TESTS COMPLETED	97.6%			
Bulk 1,2,3	89337-39	3	14	42	42	42	42		
Bulk 4,5	89340-42	3	14	42	42	42	42		
Bulk 1,2,3 <75um	89371-72	4	14	52	56	52	56		
Bulk 1,2,3 >75um	89373-74								
Bulk 1,2,3 >2.0 sp.gr.	89723	2	15	30	30	30	30		
Bulk 1,2,3 <2.0 sp.gr.	89724								
	GROUP SUM			166		166	170		

Precision 1 The number of tests completed whose relative percent differences (RPDs) fell within the test's acceptance criteria.

Accuracy 2 The number of tests completed whose percent recoveries (% R) fell within the test's acceptance criteria.

Completeness 3 The number of tests completed or that had acceptable QC including 1 and 2 above.

Total Tests 4 The number of analytes multiplied by the number of samples.

# U.S. Army Corps of Engineers

## Chain of Custody Record (ER 1110-1-263)

Proj. No.		Project Name		GREEN BAY MOBIL TREATMENT PLANT	
Sampler: (Signature) <i>[Signature]</i>					
Date	Time	Pres.	Grab	Site Code/Sample Number	Remarks
8/10/90	10:30	/	X	G.B. UNDERFLOW	
8/10/90	15:25	/	X	G.B. OVERFLOW	
8/10/90	15:35	/	X	G.B. FEED	
8/10/90	16:05	/	X	G.B. UNDERFLOW	
8/10/90	16:15	/	X	G.B. OVERFLOW	
8/10/90	16:25	/	X	G.B. FEED	
8/10/90	16:35	/	X	G.B. UNDERFLOW	
8/10/90	16:45	/	X	G.B. OVERFLOW	
8/10/90	17:15	/	X	G.B. FEED	
8/10/90					
Sampler Relinquished by: <i>[Signature]</i>		Date/Time 8/10/90 18:45		Received by: (Sig.) <i>[Signature]</i>	
Relinquished by: (Sig.)		Date/Time		Received by: (Sig.)	
Relinquished by: (Sig.)		Date/Time		Received for Laboratory by: (Sig.)	
Custody Seal No.		Lab case No.		Remarks at time of receipt:	

Proponent: CEMP-R

ENG Form 5021-R, Oct 90



## U.S. Army Corps of Engineers

Chain of Custody-Record  
(ER 1110-1-263)

Proj. No.		Project Name		Site Code/Sample Number		Number of Containers	PARTICULATE			CHEMICAL ANALYSIS			Remarks
Date	Time	Pres.	Col.	Date	Time		DATE	TIME	DATE	TIME			
8/9/00	14:55	/	X	GREEN BAY CELL #4		1	X						
8/10/00	11:25	/	X	GREEN BAY CELL #5		1	X						
8/10/00	12:00	/	X	CELL 4 CHARACTERIZATION SAMPLES		3	X	X					
8/10/00	12:00	/	X	SUPPLY WATER		1		X					
8/10/00	14:00	/	X	GREEN BAY (G.B.) UNDERFLOW		3	X	X					
8/10/00	14:00	/	X	GREEN BAY (G.B.) OVERFLOW		3	X	X					
8/10/00	14:00	/	X	GREEN BAY (G.B.) FEED		3	X	X					
8/10/00	15:05	/	X	G.B. UNDERFLOW		3	X	X					
8/10/00	15:05	/	X	G.B. OVERFLOW		3	X	X					
8/10/00	15:05	/	X	G.B. FEED		3	X	X					

Sampler Relinquished by:		Date/Time	Received by: (Sig.)		Date/Time	Hazards Associated with Samples	
[Signature]		8/10/00 13:45	[Signature]		8/10/00 18:52		
Relinquished by: (Sig.)		Date/Time	Received by: (Sig.)		Date/Time		
Relinquished by: (Sig.)		Date/Time	Received for Laboratory by: (Sig.)		Date/Time		
Custody Seal No.		Lab case No.:					

EXG Form 5021-R, Oct 90

Proponent: CEMP-Pt

JOB FILE: 89331

DATE: 22 JU

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JU  
COMPLETION DATE: 22 JUL

COLUMN.....	1	2	3
ANALYTE.....	86	100	104
MG/KG.....	TOC	O&G	TRPH

SAMP #	DESCRIPTION			
89331	BULK 1,2,3-1	CONC 51000	250	120
	5/30/00 10:30	%REC		
	GB/BP CDF	DUPL 48800		
		OID 10040158	55990172	55990172
89332	BULK 1,2,3-2	CONC 48300	200	100
	5/30/00 10:30	%REC		
	GB/BP CDF	DUPL		
		OID 10040158	55990172	55990172
89333	BULK 1,2,3-3	CONC 46400	190	98
	5/30/00 10:30	%REC		
	GB/BP CDF	DUPL		
		OID 10040158	55990172	55990172
89334	BULK 4,5-1	CONC 43900	150	82
	5/26/00 15:30	%REC		
	GB/BP CDF	DUPL		
		OID 10040158	55990172	55990172
89335	BULK 4,5-2	CONC 43800	140	74
	5/26/00 15:30	%REC		
	GB/BP CDF	DUPL		
		OID 10040158	55990172	55990172
89336	BULK 4,5-3	CONC 46800	150	78
	5/26/00 15:30	%REC		
	GB/BP CDF	DUPL		
		OID 10040158	55990172	55990172

TOC Total Organic Carbon

O&G Oil and Grease

TRPH Total Recoverable Petroleum Hydrocarbons

J9331

DATE: 22 JUN

## \*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
EM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 02 JUN  
COMPLETION DATE: 22 JUN

COLUMN.....	1	2	3
ANALYTE.....	86	100	104
MG/KG.....	TOC	O&G	TRPH

## SAMP # DESCRIPTION

BL#01	METHOD BLANK 01	CONC	<100	<35	<35
		%REC			
		DUPL			
		OID	10040158	55990172	55990172

BL#02	LCS 01	CONC	8927	922	935
		%REC	89.3	90.7	92.0
		DUPL			
		OID	10040160	55990172	55990172

BL#03	EXTERNAL QC 01	CONC	18672	N/A	N/A
		%REC			
		DUPL			
		OID	10040158	55990165	55990167

TOC	Total Organic Carbon	O&G	Oil and Grease
TRPH	Total Recoverable Petroleum Hydrocarbons		

89337

DATE: 22 JU

6/28/00

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRTMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JU  
COMPLETION DATE: 22 JU

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

89337	BULK 1,2,3-1 5/30/00 10:30 GB/BP CDF	CONC	3.28	0.895	52.9	51.7	63.2	0.965
		%REC	91.2	79.4	86.4	85.6	101.6	107.5
		DUPL	3.38	0.895	52.1	51.1	64.2	0.989
		OID	01260172	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	04650168
89338	BULK 1,2,3-2 5/30/00 10:30 GB/BP CDF	CONC	3.31	0.911	56.6	55.6	65.3	1.02
		%REC						
		DUPL						
		OID	01260172	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	04650168
89339	BULK 1,2,3-3 5/30/00 10:30 GB/BP CDF	CONC	2.79	0.858	47.2	49.3	63.6	0.997
		%REC						
		DUPL						
		OID	01260172	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	04650168
89340	BULK 4,5-1 5/26/00 15:30 GB/BP CDF	CONC	3.28	0.875	51.8	47.6	63.1	1.02
		%REC						
		DUPL						
		OID	01260172	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	04650168
89341	BULK 4,5-2 5/26/00 15:30 GB/BP CDF	CONC	3.10	0.871	49.9	48.7	66.1	1.03
		%REC						
		DUPL						
		OID	01260172	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	04650168
89342	BULK 4,5-3 5/26/00 15:30 GB/BP CDF	CONC	3.48	1.07	58.3	50.5	77.1	1.00
		%REC						
		DUPL						
		OID	01260172	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	01260172 HGA AUTH	04650168

AS Arsenic  
CR Chromium  
PB Lead

CD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 89337

DATE: 22 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUN  
COMPLETION DATE: 22 JUN

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

R

BL#01	METHOD BLANK 01	CONC	<0.200	<0.020	<0.100	0.200	<0.100	<0.040
		%REC						
		DUPL						
		OID	01260172	01260172	01260172	01260172	01260172	04650168
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
BL#02	LCS 01	CONC	4.30	2.40	9.90	10.2	5.80	0.0757
		%REC	86.0	100.4	99.1	102.0	116.8	100.9
		DUPL						
		OID	01260172	01260172	01260172	01260172	01260172	04650168
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
BL#03	EXTERNAL QC 01	CONC	76.8	32.2	12.4	87.5	1150	0.050
		%REC						
		DUPL						
		OID	01260172	01260172	01260172	01260172	01260172	04650168
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		

AS Arsenic  
CR Chromium  
PB Lead

CD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 89337

DATE: 27 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRTMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUL  
COMPLETION DATE: 27 JUL

COLUMN.....		7	8	9	10	11	12
ANALYTE.....		9	10	11	13	25	30
MG/KG.....		NI	SE	AG	ZN	BA	FE
SAMP #	DESCRIPTION						
89337	BULK 1,2,3-1	CONC 21.2	0.895	0.397	150	80.2	16700
	5/30/00 10:30	XREC 87.8	82.0	83.4	93.2	103.6	115.0
	GB/BP CDF	DUPL 20.6	0.895	0.497	153	83.3	17000
		OID 01260172	01260172	01260172	01260173	01260172	01260173
		HGA AUTH		HGA AUTH			
89338	BULK 1,2,3-2	CONC 24.4	1.00	0.501	142	92.0	17300
	5/30/00 10:30	XREC					
	GB/BP CDF	DUPL					
		OID 01260172	01260172	01260172	01260173	01260172	01260173
		HGA AUTH		HGA AUTH			
89339	BULK 1,2,3-3	CONC 19.3	0.898	0.399	138	75.9	14900
	5/30/00 10:30	XREC					
	GB/BP CDF	DUPL					
		OID 01260172	01260172	01260172	01260173	01260172	01260173
		HGA AUTH		HGA AUTH			
89340	BULK 4,5-1	CONC 20.0	1.09	0.597	135	80.9	16400
	5/26/00 15:30	XREC					
	GB/BP CDF	DUPL					
		OID 01260172	01260172	01260172	01260173	01260172	01260173
		HGA AUTH		HGA AUTH			
89341	BULK 4,5-2	CONC 19.7	1.10	0.400	139	75.3	15000
	5/26/00 15:30	XREC					
	GB/BP CDF	DUPL					
		OID 01260172	01260172	01260172	01260173	01260172	01260173
		HGA AUTH		HGA AUTH			
89342	BULK 4,5-3	CONC 21.9	0.995	0.597	154	88.9	17500
	5/26/00 15:30	XREC					
	GB/BP CDF	DUPL					
		OID 01260172	01260172	01260172	01260173	01260172	01260173
		HGA AUTH		HGA AUTH			

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 89337

DATE: 22 JU

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -CLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JU  
COMPLETION DATE: 22 JU

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

BL#01	METHOD BLANK 01	CONC	<0.100	<0.200	<0.100	<1.00	<0.100	<2.00
		%REC						
		DUPL						
		OID	01260172	01260172	01260172	01260173	01260172	01260173
		HGA AUTH			HGA AUTH			
BL#02	LCS 01	CONC	10.5	1.90	2.40	20.0	24.7	55.0
		%REC	105.0	74.4	95.6	80.0	98.8	110.0
		DUPL						
		OID	01260172	01260172	01260172	01260173	01260173	01260173
		HGA AUTH			HGA AUTH			
BL#03	EXTERNAL QC 01	CONC	13.0	1.49	3.58	274	182	13600
		%REC						
		DUPL						
		OID	01260172	01260172	01260172	01260173	01260173	01260173
		HGA AUTH			HGA AUTH			

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 89337

DATE: 22 J

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUL  
COMPLETION DATE: 22 JUL

COLUMN..... 13                      14  
ANALYTE..... 32                      33  
MG/KG..... MN                      MO

SAMP #    DESCRIPTION

89337	BULK 1,2,3-1	CONC	498	0.298
	5/30/00 10:30	%REC	103.0	86.4
	GB/BP CDF	DUPL	503	0.298
		OID	01260173	01260172
		HGA AUTH		
89338	BULK 1,2,3-2	CONC	473	0.300
	5/30/00 10:30	%REC		
	GB/BP CDF	DUPL		
		OID	01260173	01260172
		HGA AUTH		
89339	BULK 1,2,3-3	CONC	484	0.299
	5/30/00 10:30	%REC		
	GB/BP CDF	DUPL		
		OID	01260173	01260172
		HGA AUTH		
89340	BULK 4,5-1	CONC	443	0.298
	5/26/00 15:30	%REC		
	GB/BP CDF	DUPL		
		OID	01260173	01260172
		HGA AUTH		
89341	BULK 4,5-2	CONC	435	0.200
	5/26/00 15:30	%REC		
	GB/BP CDF	DUPL		
		OID	01260173	01260172
		HGA AUTH		
89342	BULK 4,5-3	CONC	447	0.298
	5/26/00 15:30	%REC		
	GB/BP CDF	DUPL		
		OID	01260173	01260172
		HGA AUTH		

MN                      Manganese

MO                      Molybdenum



JOB FILE: 89337

DATE: 22 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRTMT PLANT -OLIM-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054RD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUN  
COMPLETION DATE: 22 JUN

COLUMN.....	13	14
ANALYTE.....	32	33
MG/KG.....	MN	MO

SAMP # DESCRIPTION

BL#01	METHOD BLANK 01	CONC	<0.100		<0.100	
		%REC				
		DUPL				
		OID	01260173		01260172	
		HGA AUTH				
BL#02	LCS 01	CONC	9.90		4.50	
		%REC	99.4		90.0	
		DUPL				
		OID	01260173		01260172	
		HGA AUTH				
BL#03	EXTERNAL QC 01	CONC	452		0.299	
		%REC				
		DUPL				
		OID	01260173		01260172	
		HGA AUTH				

MN Manganese

MO Molybdenum

JOB FILE: 89343

DATE: 16 JUN C

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 4 ) \*\*\*\*\*

 JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -CLIN-ESTES  
 CHEM. PRESERVATIVE:

 JOB NUMBER: 0054PD-92310183  
 TYPE OF SAMPLE: SEDIMENT

 RECEIPT DATE: 02 JUN C  
 COMPLETION DATE: 16 JUN C

COLUMN	1	2	3	4	5	6	
ANALYTE	137	138	139	140	141	142	
UG/KG	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	
SAMP #	DESCRIPTION						RC
89343	BULK 1,2,3-1	CONC <24.8	<24.8	<24.8	1261	<24.8	<24.8
	5/30/00 10:30	%REC 111.6					
	GB/BP CDF	DUPL					
	OID 54830166	54830166	54830166	54830166	54830166	54830166	
89344	BULK 1,2,3-2	CONC <24.3	<24.3	<24.3	1083	<24.3	<24.3
	5/30/00 10:30	%REC					
	GB/BP CDF	DUPL					
	OID 54830166	54830166	54830166	54830166	54830166	54830166	
89345	BULK 1,2,3-3	CONC <24.8	<24.8	<24.8	1140	<24.8	<24.8
	5/30/00 10:30	%REC					
	GB/BP CDF	DUPL					
	OID 54830166	54830166	54830166	54830166	54830166	54830166	
89346	BULK 4,5-1	CONC <22.4	<22.4	<22.3	1160	<22.4	<22.4
	5/26/00 15:30	%REC					
	GB/BP CDF	DUPL					
	OID 54830166	54830166	54830166	54830166	54830166	54830166	
89347	BULK 4,5-2	CONC <23.0	<23.0	<23.0	1378	<23.0	<23.0
	5/26/00 15:30	%REC					
	GB/BP CDF	DUPL					
	OID 54830166	54830166	54830166	54830166	54830166	54830166	
89348	BULK 4,5-3	CONC <22.1	<22.1	<22.1	1384	<22.1	<22.1
	5/26/00 15:30	%REC					
	GB/BP CDF	DUPL					
	OID 54830166	54830166	54830166	54830166	54830166	54830166	
PCB-1016	PCB-1016			PCB-1221	PCB-1221		
PCB-1232	PCB-1232			PCB-1242	PCB-1242		
PCB-1248	PCB-1248			PCB-1254	PCB-1254		

JOB FILE: 89343

DATE: 16 JUN C

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUN C  
COMPLETION DATE: 16 JUN C

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP # DESCRIPTION

RC

BL#01	METHOD BLANK 01	CONC	<8.33	<8.33	<8.33	<8.33	<8.33	<8.33
		%REC						
		DUPL						
		QID	54830166	54830166	54830166	54830166	54830166	54830166
BL#02	LCS 01	CONC	0.82	N/A	N/A	N/A	N/A	N/A
		%REC	98.4					
		DUPL						
		QID	54830166	54830166	54830166	54830166	54830166	54830166

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE: 89343

DATE: 16 JUN 00

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRTMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 02 JUN 00  
COMPLETION DATE: 16 JUN 00

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	TcLXYL-S	DCLBP

SAMP # DESCRIPTION

RC

89343	BULK 1,2,3-1	CONC	47.9	78.4%	75.3%
	5/30/00 10:30	%REC	88.4	84.5	71.6
	GB/BP CDF	DUPL			
	OID	54830161	54830161	54830166	
89344	BULK 1,2,3-2	CONC	66.8	83.1%	73.8%
	5/30/00 10:30	%REC			
	GB/BP CDF	DUPL			
	OID	54830161	54830161	54830166	
89345	BULK 1,2,3-3	CONC	42.2	85.1%	77.4%
	5/30/00 10:30	%REC			
	GB/BP CDF	DUPL			
	OID	54830161	54830161	54830166	
89346	BULK 4,5-1	CONC	39.5	75.5%	72.7%
	5/26/00 15:30	%REC			
	GB/BP CDF	DUPL			
	OID	54830161	54830161	54830166	
89347	BULK 4,5-2	CONC	61.8	85.1%	76.9%
	5/26/00 15:30	%REC			
	GB/BP CDF	DUPL			
	OID	54830161	54830161	54830166	
89348	BULK 4,5-3	CONC	47.3	85.9%	80.3%
	5/26/00 15:30	%REC			
	GB/BP CDF	DUPL			
	OID	54830161	54830161	54830166	

PCB-1260 PCB-1260

TcLXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(60-150 WS

DCLBP Decachlorobiphenyl(Surrogate (60-150 WS))

JOB FILE: 89343

DATE: 16 JUN (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUN (

COMPLETION DATE: 16 JUN (

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	Tc(XYL-S	DCLBP

SAMP # DESCRIPTION

RC

BL#01	METHOD BLANK 01	CONC	<8.33		87.1%		81.1%	
		%REC						
		DUPL						
		OID	54830161		54830161		54830166	

BL#02	LCS 01	CONC	0.87		77.4%		78.6%	
		%REC	104.4					
		DUPL						
		OID	54830161		54830161		54830166	

PCB-1260 PCB-1260

Tc(XYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(60-150 WS

DCLBP Decachlorobiphenyl(Surrogate (60-150 WS))

Job Description: Green Bay Mobile Trtmt Plant - Olin-Estes

Job File Number: 89343

### ECB Quality Assurance Corrective Action Form

Analysis: PCB

Date: 15-June-00

Analyst: A. Morrow

Instrument: 5890 #83 GC

Problem: There is PCB's present, not sure if it is 1242 or 1248

Sample Number(s) Affected: 89343-89348

Recommended Corrective Action: Report as 1242 and do further study.

Corrective Action Taken By Analyst: Same as above.

Comments: There will be further clean-up and analyses done to better quantitate and qualitatively identify sample contaminants.

Date Corrective Action Taken: 15-June-00

Reviewed by: *[Signature]*

## INTERNAL QC DATA

Jobfile Number: 89343  
Project: GREEN BAY MOBILE TRTMT PLANT -OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 02 JUN 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
89343	89343	137	PCB-1016	111.6	77.2	36.4	54830166
89343	89343	143	PCB-1260	88.4	85.2	3.7	54830161
89343	89343	145	TclXYL-S	84.5	80.5	4.8	54830161
89343	89343	146	DCLBP	71.6	73.0	1.9	54830166

JOB FILE: 89749

DATE: 13 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 8 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 02 JUN  
COMPLETION DATE: 13 JUN

		COLUMN.....	1	2	3	4	5	6
		ANALYTE.....	290	294	296	297	303	304
		UG/KG.....	NAPHTH	ACENAP	ACENAP	FLUORE	PHENAN	ANTRAC
SAMP #	DESCRIPTION							
89349	BULK 1,2,3-1	CONC	163	10 J	19 J	40.0	258	45.9
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89350	BULK 1,2,3-2	CONC	195	11 J	22.0	44.9	275	50.7
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89351	BULK 1,2,3-3	CONC	138	8.9 J	23.8	42.6	275	52.5
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89352	BULK 4,5-1	CONC	157	9.8 J	15 J	38.5	213	35.8
	5/26/00 15:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89353	BULK 4,5-2	CONC	113	8.2 J	14 J	33.0	218	40.3
	5/26/00 15:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89354	BULK 4,5-3	CONC	104	9.0 J	14 J	37.0	229	43.4
	5/26/00 15:30	%REC	90.0	74.0	79.5	89.0	102.5	90.0
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160

NAPHTH Naphthalene  
ACENAP Acenaphthene  
PHENAN PhenanthreneACENAP Acenaphthylene  
FLUORE Fluorene  
ANTRAC Anthracene



JOB FILE: 89349

DATE: 13 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 8 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRTMT PLANT -CLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUN  
COMPLETION DATE: 13 JUN

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	290	294	296	297	303	304
UG/KG.....	NAPHTH	ACENAY	ACENAP	FLUORE	PHENAN	ANTRAC

SAMP # DESCRIPTION

RC

BL#01	METHOD BLANK 01	CONC	<10	<10	<10	<10	<10	<10
		%REC						
		DUPL						
		QID	08890160	08890160	08890160	08890160	08890160	08890160
BL#02	LCS 01	CONC	64.5	64.0	76.0	80.5	88.5	85.5
		%REC	64.5	64.0	76.0	80.5	88.5	85.5
		DUPL						
		QID	08890160	08890160	08890160	08890160	08890160	08890160

NAPHTH Naphthalene  
ACENAP Acenaphthene  
PHENAN Phenanthrene

ACENAY Acenaphthylene  
FLUORE Fluorene  
ANTRAC Anthracene

JOB FILE: 89349

DATE: 13 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 8 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 02 JUN  
COMPLETION DATE: 13 JUN

		COLUMN.....	7	8	9	10	11	12
		ANALYTE.....	306	307	309	310	313	314
		UG/KG.....	FLANTHE	PYRENE	CHRYSE	BAANTHR	BBFLANT	BKFLANT
SAMP #	DESCRIPTION							
89349	BULK 1,2,3-1	CONC	417	369	253	187	186	147
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89350	BULK 1,2,3-2	CONC	388	465	272	197	185	143
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89351	BULK 1,2,3-3	CONC	359	341	218	157	149	127
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89352	BULK 4,5-1	CONC	293	290	189	131	125	97.6
	5/26/00 15:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89353	BULK 4,5-2	CONC	327	309	195	146	128	108
	5/26/00 15:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
89354	BULK 4,5-3	CONC	308	305	193	139	129	96.7
	5/26/00 15:30	%REC	132.0	130.0	118.5	101.0	106.5	80.0
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160

FLANTHE Fluoranthene  
CHRYSE Chrysene  
BBFLANT Benzo(b)FluoranthenePYRENE Pyrene  
BAANTHR Benzo(a)Anthracene  
BKFLANT Benzo(k)Fluoranthene

JOB FILE: B9349

DATE: 13 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 8 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUN  
COMPLETION DATE: 13 JUN

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	306	307	309	310	313	314
UG/KG.....	FLANTHE	PYRENE	CHRYSE	BAANTHR	BBFLANT	BKFLANT

SAMP # DESCRIPTION

R

BL#01	METHOD BLANK 01	CONC	<10	<10	<10	<10	<10	<10
		%REC						
		DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160
BL#02	LCS 01	CONC	91.5	87.0	97.5	85.0	78.5	88.0
		%REC	91.5	87.0	97.5	85.0	78.5	88.0
		DUPL						
		OID	08890160	08890160	08890160	08890160	08890160	08890160

FLANTHE Fluoranthene  
CHRYSE Chrysene  
BBFLANT Benzo(b)Fluoranthene

PYRENE Pyrene  
BAANTHR Benzo(a)Anthracene  
BKFLANT Benzo(k)Fluoranthene

JOB FILE: 89349

DATE: 13 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 8 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 02 JUN  
COMPLETION DATE: 13 JUN

COLUMN.....	13	14	15	16	17	18
ANALYTE.....	315	316	317	318	322	327
UG/KG.....	BAPYRE	1123PYR	DBAHANT	B-GHI-PY	2MeNAPH	2FIBP-S

SAMP # DESCRIPTION

SAMP #	DESCRIPTION	CONC	205	174	25.4	188	162	79.0%
89349	BULK 1,2,3-1	CONC	205	174	25.4	188	162	79.0%
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890154	08890160	08890160	08890160
89350	BULK 1,2,3-2	CONC	207	176	30.6	185	174	76.2%
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890154	08890160	08890160	08890160
89351	BULK 1,2,3-3	CONC	168	143	31.7	165	137	72.2%
	5/30/00 10:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890154	08890160	08890160	08890160
89352	BULK 4,5-1	CONC	145	118	26.9	150	154	74.8%
	5/26/00 15:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890154	08890160	08890160	08890160
89353	BULK 4,5-2	CONC	152	125	27.5	148	118	67.7%
	5/26/00 15:30	%REC						
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890154	08890160	08890160	08890160
89354	BULK 4,5-3	CONC	150	122	25.3	149	119	65.9%
	5/26/00 15:30	%REC	101.0	106.5	95.0	100.5	97.5	71.7
	GB/BP CDF	DUPL						
		OID	08890160	08890160	08890154	08890160	08890160	08890160

BAPYRE Benzo(a)Pyrene

DBAHANT Dibenzo(A,H)Anthracene

2MeNAPH 2-Methylnaphthalene

1123PYR Indeno(1,2,3-C,D)Pyrene

B-GHI-PY Benzo(G,H,I)Perylene

2FIBP-S 2-Fluorobiphenyl(Surrogate (30-115 S))

JOB TIME: 08349

DATE: 13 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 8 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TREATMENT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUL  
COMPLETION DATE: 13 JUL

COLUMN.....	13	14	15	16	17	18
ANALYTE.....	315	316	317	318	322	327
UG/KG.....	BAPYRE	I123PYR	DBAHANT	B-GHI-PY	2MeNAPH	2FlBP-S

SAMP # DESCRIPTION

SAMP #	DESCRIPTION	CONC	13	14	15	16	17	18
BL#01	METHOD BLANK 01	<10	<10	<10	<10	<10	82.6%	
	%REC							
	DUPL							
	OID	08890160	08890160	08890154	08890160	08890160	08890160	
BL#02	LCS 01	74.5	87.0	85.5	91.0	65.5	73.7%	
	%REC	74.5	87.0	85.5	91.0	65.5		
	DUPL							
	OID	08890160	08890160	08890154	08890160	08890160	08890160	

BAPYRE Benzo(a)Pyrene  
DBAHANT Dibenzo(A,H)Anthracene  
2MeNAPH 2-Methylnaphthalene

I123PYR Indeno(1,2,3-C,D)Pyrene  
B-GHI-PY Benzo(G,H,I)Perylene  
2FlBP-S 2-Fluorobiphenyl(Surrogate (30-115 S))

JOB FILE: 85349

DATE: 13 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 7 OF 8 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PO-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUN  
COMPLETION DATE: 13 JUN

COLUMN..... 19  
ANALYTE..... 328  
UG/KG..... PTERP-S

SAMP # DESCRIPTION

89349 BULK 1,2,3-1 CONC 77.7%  
5/30/00 10:30 XREC  
GB/BP CDF DUPL  
OID 08890160

89350 BULK 1,2,3-2 CONC 92.9%  
5/30/00 10:30 XREC  
GB/BP CDF DUPL  
OID 08890160

89351 BULK 1,2,3-3 CONC 78.4%  
5/30/00 10:30 XREC  
GB/BP CDF DUPL  
OID 08890160

89352 BULK 4,5-1 CONC 78.9%  
5/26/00 15:30 XREC  
GB/BP CDF DUPL  
OID 08890160

89353 BULK 4,5-2 CONC 76.4%  
5/26/00 15:30 XREC  
GB/BP CDF DUPL  
OID 08890160

89354 BULK 4,5-3 CONC 80.5%  
5/26/00 15:30 XREC 79.0  
GB/BP CDF DUPL  
OID 08890160

PTERP-S p-Terphenyl-D14(Surrogate (18-137 S))

JOB FILE: 89349

DATE: 13 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 8 OF 8 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRTMT PLANT -OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 02 JUN  
COMPLETION DATE: 13 JUN

COLUMN..... 19  
ANALYTE..... 328  
UG/KG..... PTERP-S

SAMP # DESCRIPTION

BL#01 METHOD BLANK 01 CONC 76.6%  
%REC  
DUPL  
OID 08890160

BL#02 LCS 01 CONC 70.8%  
%REC  
DUPL  
OID 08890160

PTERP-S p-Terphenyl-D14(Surrogate (18-137 S))

# INTERNAL QC DATA

Jobfile Number: 89349  
 Project: GREEN BAY MOBILE TRTMT PLANT -OLIN-ESTES  
 Account Number: 0054PD-92310183  
 Date Received: 02 JUN 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
89349	89354	290	NAPHTH	90.0	76.0	16.9	08890160
89349	89354	294	ACENAY	74.0	72.0	2.7	08890160
89349	89354	296	ACENAP	79.5	78.0	1.9	08890160
89349	89354	297	FLUORE	89.0	88.5	0.6	08890160
89349	89354	303	PHENAN	102.5	97.0	5.5	08890160
89349	89354	304	ANTRAC	90.0	90.0	0.0	08890160
89349	89354	306	FLANTHE	132.0	126.5	4.3	08890160
89349	89354	307	PYRENE	130.0	114.0	13.1	08890160
89349	89354	309	CHRYSE	118.5	105.0	12.1	08890160
89349	89354	310	BAANTHR	101.0	113.5	11.7	08890160
89349	89354	313	BBFLANT	106.5	98.5	7.8	08890160
89349	89354	314	BKFLANT	80.0	78.0	2.5	08890160
89349	89354	315	BAPYRE	101.0	93.5	7.7	08890160
89349	89354	316	I123PYR	106.5	103.0	3.3	08890160
89349	89354	317	DBAHANT	95.0	96.0	1.0	08890154
89349	89354	318	B-GHI-PY	100.5	95.0	5.6	08890160
89349	89354	322	2MeNAPH	97.5	83.0	16.1	08890160
89349	89354	327	2FLBP-S	71.7	69.8	2.7	08890160
89349	89354	328	PTERP-S	79.0	81.0	2.5	08890160

Page 1

END OF REPORT



JOB FILE: -89371

DATE: 22 JUN 00

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIM-ESTES  
SEM. PRESERVATIVE:JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 05 JUN 00  
COMPLETION DATE: 22 JUN 00

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP #	DESCRIPTION								ROW
89371	BULK 1,2,3	CONC	2.60	0.770	43.7	43.8	58.5	1.07	1
	<75UM A 6/2/00	%REC	91.4	79.4	95.8	92.4	104.2	116.0	
	1300 GB/BP CDF	DUPL	2.80	0.950	47.1	47.9	63.4	1.08	
		OID	01260172	01260172	01260172	01260172	01260172	04650168	
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
89372	BULK 1,2,3	CONC	3.30	0.880	50.4	43.9	58.1	0.999	2
	<75UM B 6/2/00	%REC							
	1300 GB/BP CDF	DUPL							
		OID	01260172	01260172	01260172	01260172	01260172	04650168	
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
89373	BULK 1,2,3	CONC	3.60	1.06	51.0	67.4	74.1	1.40	3
	>75UM A 6/5/00	%REC							
	1400 GB/BP CDF	DUPL							
		OID	01260172	01260172	01260172	01260172	01260172	04650168	
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
89374	BULK 1,2,3	CONC	3.50	1.16	50.3	78.0	79.5	1.48	4
	>75UM B 6/5/00	%REC							
	1400 GB/BP CDF	DUPL							
		OID	01260172	01260172	01260172	01260172	01260172	04650168	
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
BL#01	METHOD BLANK 01	CONC	<0.200	<0.020	<0.100	0.200	<0.100	<0.040	5
		%REC							
		DUPL							
		OID	01260172	01260172	01260172	01260172	01260172	04650168	
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
BL#02	LCS 01	CONC	4.30	2.40	9.90	10.2	5.80	0.0768	6
		%REC	86.0	96.4	99.1	102.0	116.8	102.4	
		DUPL							
		OID	01260172	01260172	01260172	01260172	01260172	04650168	
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		

AS Arsenic  
CR Chromium  
PB Lead

CD Cadmium  
CU Copper  
HG Mercury

JOB FILE: - 89371

DATE: 22 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
 PRESERVATIVE:

JOB NUMBER: 005490-92310183  
 TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUN  
 COMPLETION DATE: 22 JUN

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/XG.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

RE

BL#03	EXTERNAL QC 01	CONC 76.8	32.2	12.4	87.5	1150	0.050
		%REC					
		DUPL					
		QID 01260172	01260172	01260172	01260172	01260172	04650168
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	

AS Arsenic  
 CR Chromium  
 PB Lead

CD Cadmium  
 CU Copper  
 HG Mercury

JOB FILE: 89371

DATE: 22 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
PRESERVATIVE:JOB NUMBER: 00549D-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 05 JUN  
COMPLETION DATE: 22 JUN

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

R.

89371	BULK 1,2,3	CONC	18.8	0.800	0.400	153	73.3	13900	
	<75UM A 6/2/00	%REC	96.2	83.6	82.6	99.8	110.4	115.0	
	1300 GB/BP CDF	DUPL	23.0	0.900	0.400	140	79.2	14300	
		OID	01260172	01260172	01260172	01260173	01260172	01260173	
		HGA AUTH			HGA AUTH				
89372	BULK 1,2,3	CONC	20.9	1.10	0.500	155	82.6	17100	
	<75UM B 6/2/00	%REC							
	1300 GB/BP CDF	DUPL							
		OID	01260172	01260172	01260172	01260173	01260172	01260173	
		HGA AUTH			HGA AUTH				
89373	BULK 1,2,3	CONC	16.0	1.40	0.300	130	57.9	10900	
	>75UM A 6/5/00	%REC							
	1400 GB/BP CDF	DUPL							
		OID	01260172	01260172	01260172	01260173	01260172	01260173	
		HGA AUTH			HGA AUTH				
89374	BULK 1,2,3	CONC	18.4	1.70	0.300	161	57.4	10600	4
	>75UM B 6/5/00	%REC							
	1400 GB/BP CDF	DUPL							
		OID	01260172	01260172	01260172	01260173	01260172	01260173	
		HGA AUTH			HGA AUTH				
BL#01	METHOD BLANK 01	CONC	<0.100	<0.200	<0.100	<1.00	<0.100	<2.00	5
		%REC							
		DUPL							
		OID	01260172	01260172	01260172	01260173	01260172	01260173	
		HGA AUTH			HGA AUTH				
BL#02	LCS 01	CONC	10.5	1.90	2.40	20.0	24.7	55.0	6
		%REC	105.0	74.4	95.6	80.0	98.8	110.0	
		DUPL							
		OID	01260172	01260172	01260172	01260173	01260172	01260173	
		HGA AUTH			HGA AUTH				
NI	Nickel								
AG	Silver								
BA	Barium								
SE	Selenium								
ZN	Zinc								
FE	Iron								

JOB FILE: 89371

DATE: 22 JUN 01

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
 REM. PRESERVATIVE:

JOB NUMBER: 005490-92310183  
 TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUN 01  
 COMPLETION DATE: 22 JUN 01

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP #	DESCRIPTION							ROL	
BL#03	EXTERNAL OC 01	CONC	13.0	1.49	3.58	274	182	13600	7
		%REC							
		DUPL							
		OID	01260172	01260172	01260172	01260173	01260172	01260173	
		HGA AUTH		HGA AUTH					

NI Nickel  
 AG Silver  
 BA Barium

SE Selenium  
 ZN Zinc  
 FE Iron

JOB FILE: B9371

DATE: 22 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
 GEN. PRESERVATIVE:

JOB NUMBER: 00549D-92310183  
 TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUN  
 COMPLETION DATE: 22 JUN

COLUMN.....	13	14
ANALYTE.....	32	33
MC/KG.....	MN	MO

SAMP # DESCRIPTION

RC

89371	BULK 1,2,3	CONC	418	0.200	
	<75UM A 6/2/00	%REC	106.0	85.2	
	1300 GB/BP CDF	DUPL	439	0.300	
		OID	01260173	01260172	
			HGA AUTH		
89372	BULK 1,2,3	CONC	454	0.400	
	<75UM B 6/2/00	%REC			
	1300 GB/BP CDF	DUPL			
		OID	01260173	01260172	
			HGA AUTH		
89373	BULK 1,2,3	CONC	758	0.400	
	>75UM A 6/5/00	%REC			
	1400 GB/BP CDF	DUPL			
		OID	01260173	01260172	
			HGA AUTH		
9374	BULK 1,2,3	CONC	906	0.400	
	>75UM B 6/5/00	%REC			
	1400 GB/BP CDF	DUPL			
		OID	01260173	01260172	
			HGA AUTH		
BL#01	METHOD BLANK 01	CONC	<0.100	<0.100	
		%REC			
		DUPL			
		OID	01260173	01260172	
			HGA AUTH		
BL#02	LCS 01	CONC	9.90	4.50	
		%REC	99.4	90.0	
		DUPL			
		OID	01260173	01260172	
			HGA AUTH		

MN Manganese

MO Molybdenum

JOB FILE: B9371

DATE: 22 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUN  
COMPLETION DATE: 22 JUN

COLUMN..... 13            14  
ANALYTE..... 32            33  
MG/KG..... MN            MO

SAMP #    DESCRIPTION

RC

BL#03    EXTERNAL QC 01    CONC 452    | 0.299    |  
                              %REC            |            |  
                              DUPL            |            |  
                              QID 01260173    | 01260172    |  
                              HGA AUTH

MN            Manganese

MO            Molybdenum

JOB FILE: 89375

DATE: 15 JUN (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUN (

COMPLETION DATE: 15 JUN (

COLUMN.....	1	2	3
ANALYTE.....	86	100	104
MG/KG.....	TOC	O&G	TRPH

SAMP # DESCRIPTION

RE

89375	BULK 1,2,3 <75UM A 6/2/00 1300 GB/BP CDF	CONC 41600 %REC DUPL OID 10040160	240 B 55990165	140 B 55990167
89376	BULK 1,2,3 <75UM B 6/2/00 1300 GB/BP CDF	CONC 41000 %REC DUPL OID 10040160	170 B 55990165	110 B 55990167
89377	BULK 1,2,3 >75UM A 6/5/00 1400 GB/BP CDF	CONC 34100 %REC DUPL OID 10040160	1080 B 55990165	630 B 55990167
89378	BULK 1,2,3 >75UM B 6/5/00 1400 GB/BP CDF	CONC 43700 %REC DUPL 38500 OID 10040160	980 B 85.1 55990165	420 B 90.9 55990167
BL#01	METHOD BLANK 01	CONC <100 %REC DUPL OID 10040160	66 55990165	80 55990167
BL#02	LCS 01	CONC 10000 %REC 100.0 DUPL OID 10040160	970 55990165	962 55990167

TOC Total Organic Carbon  
TRPH Total Recoverable Petroleum Hydrocarbons

O&G Oil and Grease

JOB FILE: 89375

DATE: 15 JUN 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 00549D-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUN 0  
COMPLETION DATE: 15 JUN 0

COLUMN.....	1	2	3
ANALYTE.....	86	100	104
MG/KG.....	TOC	O&G	TRPH

SAMP # DESCRIPTION

RC

BL#03	EXTERNAL QC 01	CONC 21155	N/A	N/A
		%REC		
		DUPL		
	010 10040160	55990165	55990167	

TOC Total Organic Carbon

O&G Oil and Grease

TRPH Total Recoverable Petroleum Hydrocarbons



## INTERNAL QC DATA

Jobfile Number: 89375  
Project: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
Account Number: 00549D-92310183  
Date Received: 05 JUN 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
89375	89378	100	O&G	85.1	78.8	7.7	55990165
89375	89378	104	TRPH	90.9	89.0	2.1	55990167

JOB FILE: 89379

DATE: 16 JUN 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JRM  
6-16-00  
JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 005490-92310183

RECEIPT DATE: 05 JUN 0

TYPE OF SAMPLE: SEDIMENT

COMPLETION DATE: 16 JUN 0

COLUMN.....	1	2	3	4	5	6	
ANALYTE.....	137	138	139	140	141	142	
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	
SAMP #	DESCRIPTION						RG
89379	BULK 1,2,3	CONC	<25.2	<25.2	<25.2	1095	<25.2
	<75UM A 6/2/00	%REC					
	1300 GB/BP CDF	DUPL					
	OID	54830166	54830166	54830166	54830166	54830166	54830166
89380	BULK 1,2,3	CONC	<23.7	<23.7	<23.7	845	<23.4
	<75UM B 6/2/00	%REC					
	1300 GB/BP CDF	DUPL					
	OID	54830166	54830166	54830166	54830166	54830166	54830166
89381	BULK 1,2,3	CONC	<29.5	<29.5	<29.5	1662	<29.5
	>75UM A 6/5/00	%REC					
	1400 GB/BP CDF	DUPL					
	OID	54830166	54830166	54830166	54830166	54830166	54830166
89382	BULK 1,2,3	CONC	<29.9	<29.9	<29.9	1823	<29.9
	>75UM B 6/5/00	%REC					
	1400 GB/BP CDF	DUPL					
	OID	54830166	54830166	54830166	54830166	54830166	54830166
BL#01	METHOD BLANK 01	CONC	<8.33	<8.33	<8.33	<8.33	<8.33
		%REC					
		DUPL					
		OID	54830166	54830166	54830166	54830166	54830166
BL#02	LCS 01	CONC	0.82	N/A	N/A	N/A	N/A
		%REC	98.4				
		DUPL					
		OID	54830166	54830166	54830166	54830166	54830166
PCB-1016	PCB-1016			PCB-1221	PCB-1221		
PCB-1232	PCB-1232			PCB-1242	PCB-1242		
PCB-1248	PCB-1248			PCB-1254	PCB-1254		

JOB FILE: 89379

DATE: 16 JUN C

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUN C  
COMPLETION DATE: 16 JUN C

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	Tc(XYL-S	DCLBP

SAMP # DESCRIPTION RC

89379	BULK 1,2,3	CONC	42.8	82.3%	79.2%
	<75UM A 6/2/00	%REC			
	1300 GB/BP CDF	DUPL			
		OID	54830161	54830166	54830166

89380	BULK 1,2,3	CONC	37.1	89.1%	82.1%
	<75UM B 6/2/00	%REC			
	1300 GB/BP CDF	DUPL			
		OID	54830161	54830166	54830166

89381	BULK 1,2,3	CONC	74.3	81.7%	75.8%
	>75UM A 6/5/00	%REC			
	1400 GB/BP CDF	DUPL			
		OID	54830161	54830166	54830166

89382	BULK 1,2,3	CONC	81.5	86.2%	74.1%
	>75UM B 6/5/00	%REC			
	1400 GB/BP CDF	DUPL			
		OID	54830161	54830166	54830166

BL#01	METHOD BLANK 01	CONC	<8.33	87.1%	81.1%
		%REC			
		DUPL			
		OID	54830161	54830166	54830166

BL#02	LCS 01	CONC	0.87	77.4%	78.6%
		%REC	104.4		
		DUPL			
		OID	54830161	54830166	54830166

PCB-1260 PCB-1260

Tc(XYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(60-150 WS

DCLBP Decachlorobiphenyl(Surrogate (60-150 WS))

Job Description: Green Bay Mobile Trtmt Plant - Olin-Estes

Job File Number: 89379

### ECB Quality Assurance Corrective Action Form

Analysis: PCB

Date: 15-June-00

Analyst: A. Morrow

Instrument: 5890 #83 GC

Problem: There is PCB's present, not sure if it is 1242 or 1248

Sample Number(s) Affected: 89379-89382

Recommended Corrective Action: Report as 1242 and do further study.

Corrective Action Taken By Analyst: Same as above.

Comments: There will be further clean-up and analyses done to better quantitate and qualitatively identify sample contaminants.

Date Corrective Action Taken: 15-June-00

Reviewed by: *[Signature]*

22-February-96

c:\ecb\ecbform.xls

JOB FILE: 89383

DATE: 14 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 00549D-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUL  
COMPLETION DATE: 19 JUL

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	290	294	296	297	303	304
UG/KG.....	NAPHTH	ACENAY	ACENAP	FLUORE	PHENAN	ANTRAC

SAMP # DESCRIPTION

89383	BULK 1,2,3 <75UM A 6/2/00 1300 GB/BP CDF	CONC 72.9 %REC DUPL OID 08890160	<20   08890160	10 J   08890160	26.0   08890160	166   08890160	27.0   08890160
89384	BULK 1,2,3 <75UM B 6/2/00 1300 GB/BP CDF	CONC 99.0 %REC DUPL OID 08890160	<19   08890160	12 J   08890160	29.5   08890160	186   08890160	31.4   08890160
89385	BULK 1,2,3 >75UM A 6/5/00 1400 GB/BP CDF	CONC 352 %REC DUPL OID 08890160	43.2   08890160	60.7   08890160	118   08890160	886   08890160	202   08890160
89386	BULK 1,2,3 >75UM B 6/5/00 1400 GB/BP CDF	CONC 382 %REC DUPL OID 08890160	39.2   08890160	63.0   08890160	128   08890160	868   08890160	185   08890160
BL#01	METHOD BLANK 01	CONC <10 %REC DUPL OID 08890160	<10   08890160	<10   08890160	<10   08890160	<10   08890160	<10   08890160
BL#02	LCS 01	CONC 64.5 %REC 64.5 DUPL OID 08890160	64.0 64.0  08890160	76.0 76.0  08890160	80.5 80.5  08890160	88.5 88.5  08890160	85.5 85.5  08890160

NAPHTH Naphthalene  
ACENAP Acenaphthene  
PHENAN Phenanthrene

ACENAY Acenaphthylene  
FLUORE Fluorene  
ANTRAC Anthracene

JOB FILE: 89383

DATE: 14 JL

## \*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 05 JL  
COMPLETION DATE: 19 JL

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	306	307	309	310	313	314
UG/KG.....	FLANTHE	PYRENE	CHRYSE	BAANTHR	BBFLANT	BKFLANT

SAMP # DESCRIPTION

89383	BULK 1,2,3	CONC	248	222	141	90.9	105	68.9
	<75UM A 6/2/00	%REC						
	1300 GB/BP CDF	DUPL						
		OTD	08890160	08890160	08890160	08890160	08890160	08890160
89384	BULK 1,2,3	CONC	273	258	163	105	120	83.8
	<75UM B 6/2/00	%REC						
	1300 GB/BP CDF	DUPL						
		OTD	08890160	08890160	08890160	08890160	08890160	08890160
89385	BULK 1,2,3	CONC	1200	1420	875	812	584	473
	>75UM A 6/5/00	%REC						
	1400 GB/BP CDF	DUPL						
		OTD	08890160	08890160	08890160	08890160	08890160	08890160
89386	BULK 1,2,3	CONC	1060	1300	825	700	546	454
	>75UM B 6/5/00	%REC						
	1400 GB/BP CDF	DUPL						
		OTD	08890160	08890160	08890160	08890160	08890160	08890160
BL#01	METHOD BLANK 01	CONC	<10	<10	<10	<10	<10	<10
		%REC						
		DUPL						
		OTD	08890160	08890160	08890160	08890160	08890160	08890160
BL#02	LCS 01	CONC	91.5	87.0	97.5	85.0	78.5	88.0
		%REC	91.5	87.0	97.5	85.0	78.5	88.0
		DUPL						
		OTD	08890160	08890160	08890160	08890160	08890160	08890160

FLANTHE Fluoranthene  
CHRYSE Chrysene  
BBFLANT Benzo(b)Fluoranthene

PYRENE Pyrene  
BAANTHR Benzo(a)Anthracene  
BKFLANT Benzo(k)Fluoranthene

JOB FILE: 89383

DATE: 14 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUL  
COMPLETION DATE: 19 JUL

COLUMN.....	13	14	15	16	17	18
ANALYTE.....	315	316	317	318	322	327
UG/KG.....	BAPYRE	I123PYR	DBAHANT	B-GHI-PY	2MeNAPH	2FLBP-S

SAMP # DESCRIPTION

89383	BULK 1,2,3 <75UM A 6/2/00 1300 GB/BP CDF	CONC 99.9 %REC DUPL OID 08890160	90.9     08890160	19 J     08890160	103     08890160	86.9     08890160	65.2%     08890160
89384	BULK 1,2,3 <75UM B 6/2/00 1300 GB/BP CDF	CONC 117 %REC DUPL OID 08890160	108     08890160	20.0     08890160	122     08890160	111     08890160	75.9%     08890160
89385	BULK 1,2,3 >75UM A 6/5/00 1400 GB/BP CDF	CONC 813 %REC DUPL OID 08890160	553     08890160	114     08890160	611     08890160	411     08890160	75.9%     08890160
89386	BULK 1,2,3 >75UM B 6/5/00 1400 GB/BP CDF	CONC 725 %REC DUPL OID 08890160	527     08890160	114     08890160	617     08890160	441     08890160	74.3%     08890160
BL#01	METHOD BLANK 01	CONC <10 %REC DUPL OID 08890160	<10     08890160	<10     08890160	<10     08890160	<10     08890160	82.6%     08890160
BL#02	LCS 01	CONC 74.5 %REC 74.5 DUPL OID 08890160	87.0     08890160	85.5     08890160	91.0     08890160	65.5     08890160	73.7%     08890160

BAPYRE Benzo(a)Pyrene  
DBAHANT Dibenzo(A,H)Anthracene  
2MeNAPH 2-Methylnaphthalene

I123PYR Indeno(1,2,3-C,D)Pyrene  
B-GHI-PY Benzo(G,H,I)Perylene  
2FLBP-S 2-Fluorobiphenyl(Surrogate (30-115 S))

JOB FILE: 89383

DATE: 14 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 05 JUN  
COMPLETION DATE: 19 JUN

COLUMN..... 19  
ANALYTE..... 328  
UG/KG..... PTERP-S

SAMP # DESCRIPTION

89383 BULK 1,2,3 CONC 79.6%  
<75UM A 6/2/00 %REC  
1300 GB/BP CDF DUPL  
OID 08890160

89384 BULK 1,2,3 CONC 78.4%  
<75UM B 6/2/00 %REC  
1300 GB/BP CDF DUPL  
OID 08890160

89385 BULK 1,2,3 CONC 86.0%  
>75UM A 6/5/00 %REC  
1400 GB/BP CDF DUPL  
OID 08890160

89386 BULK 1,2,3 CONC 86.9%  
>75UM B 6/5/00 %REC  
1400 GB/BP CDF DUPL  
OID 08890160

BL#01 METHOD BLANK 01 CONC 76.6%  
%REC  
DUPL  
OID 08890160

BL#02 LCS 01 CONC 70.8%  
%REC 70.8  
DUPL  
OID 08890160

PTERP-S p-Terphenyl-D14(Surrogate (18-137 S))



Y-10  
8/10/00

JOB FILE: 895LS

DATE: 03 AUG 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUN 0  
COMPLETION DATE: 3 AUG 0

		COLUMN.....	1	2	3	4	5	6		
		ANALYTE.....	2	4	5	6	7	8		
		MG/KG.....	AS	CD	CR	CU	PB	HG		
SAMP #	DESCRIPTION								ROA	
89585	C4B BULKA	CONC	2.10	0.609	28.9	27.3	42.9	1.08		
	6/21/00 1100	%REC	94.6	92.4	87.8	80.8	98.0	112.3		
	GB NW DMP CELL4	DUPL	2.20	0.609	28.8	27.4	42.4	1.07		
		OID	01260215	01260215	01260215	01260215	01230209	04650189		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
89586	C4B BULKB	CONC	2.30	0.600	30.7	38.3	44.5	1.09		2
	6/21/00 1100	%REC								
	BG NW DMP CELL4	DUPL								
		OID	01260215	01260215	01260215	01260215	01230209	04650189		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
BL#01	METHOD BLANK 01	CONC	<0.200	<0.020	<0.100	0.600	<1.00	<0.040		3
		%REC								
		DUPL								
		OID	01260215	01260215	01260215	01260215	01230209	04650189		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
BL#02	LCS 01	CONC	9.40	4.84	19.0	17.4	21.0	0.077		4
		%REC	93.7	96.8	95.0	87.0	105.0	102.1		
		DUPL								
		OID	01260215	01260215	01260215	01260215	01230209	04650189		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
BL#03	EXTERNAL QC 01	CONC	88.3	37.1	22.5	86.9	1140	0.058		5
		%REC								
		DUPL								
		OID	01260215	01260215	01260215	01260215	01230209	04650189		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
AS	Arsenic									
CR	Chromium									
PB	Lead									
CD	Cadmium									
CU	Copper									
HG	Mercury									

JOB FILE: 89563

DATE: 03 AUG

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 26 JUN  
COMPLETION DATE: 3 AUG

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP #	DESCRIPTION								
89585	C4B BULKA	CONC	10.3	0.499	0.299	74.0	40.5	7550	
	6/21/00 1100	%REC	96.4	106.6	17.6	90.8	96.6	160.0	
	GB NW DMP CELL4	DUPL	10.1	0.499	0.399	74.5	40.5	7540	
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
89586	C4B BULK8	CONC	11.3	0.500	0.700	78.2	45.2	94.8	
	6/21/00 1100	%REC							
	GB NW DMP CELL4	DUPL							
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
BL#01	METHOD BLANK 01	CONC	1.20	<0.200	<0.100	<1.00	<0.100	<2.00	
		%REC							
		DUPL							
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
BL#02	LCS 01	CONC	21.6	4.10	4.50	49.9	51.0	110	
		%REC	108.0	82.8	90.8	99.8	102.0	110.0	
		DUPL							
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
BL#03	EXTERNAL QC 01	CONC	16.6	1.69	4.49	282	195	24900	
		%REC							
		DUPL							
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
NI	Nickel			SE	Selenium				
AG	Silver			ZN	Zinc				
BA	Barium			FE	Iron				

JOB FILE: 89585

DATE: 03 AUG 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRTMT PLT - OLIX-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUN 0  
COMPLETION DATE: 3 AUG 0

COLUMN..... 13                      14  
ANALYTE..... 32                      33  
MG/KG..... MN                      MO

SAMP #	DESCRIPTION	CONC	REC	DUPL	OID	HGA AUTH	RO
89585	C48 BULKA	134	0.299				
	6/21/00 1100	%REC 101.6	105.4				
	GB NW DMP CELL4	DUPL 133	0.299				
		OID 01230209	01260215				
		HGA AUTH					
89586	C48 BULKB	146	0.400				2
	6/21/00 1100	%REC					
	8G NW DMP CELL4	DUPL					
		OID 01230209	01260215				
		HGA AUTH					
BL#01	METHOD BLANK 01	CONC <0.100	<0.100				3
		%REC					
		DUPL					
		OID 01230209	01260215				
		HGA AUTH					
BL#02	LCS 01	CONC 19.6	5.00				4
		%REC 98.0	100.0				
		DUPL					
		OID 01230209	01260215				
		HGA AUTH					
BL#03	EXTERNAL QC 01	CONC 492	0.997				5
		%REC					
		DUPL					
		OID 01230209	01260215				
		HGA AUTH					
MN	Manganese						
MO	Molybdenum						

JOB FILE: 89J87

DATE: 13 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUN  
COMPLETION DATE: 13 JUL

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP # DESCRIPTION

RI

89587	C4B BULK1 6/21/00 1100 BG NW DMP CELL4	CONC <12.7 %REC DUPL OID 54830182	<12.7   54830182	<12.7   54830182	<12.7   54830182	3787   54830182	<12.7   54830182
89588	C4B BULK8 6/21/00 1100 GB NW DMP CELL4	CONC <12.7 %REC DUPL OID 54830182	<12.7   54830182	<12.7   54830182	<12.7   54830182	3722   54830182	<12.7   54830182
BL#01	METHOD BLANK 01	CONC <8.3 %REC DUPL OID 54830182	<8.3   54830182	<8.3   54830182	<8.3   54830182	<8.3   54830182	<8.3   54830182
BL#02	LCS 01	CONC 0.97 %REC 115.0 DUPL OID 54830182	N/A   54830182	N/A   54830182	N/A   54830182	N/A   54830182	N/A   54830182

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE: 85587

DATE: 13 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUN  
COMPLETION DATE: 13 JUL

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	TclXYL-S	DCLBP

SAMP # DESCRIPTION

89587	C4B BULK1	CONC	41.9		98.4%		82.3%	
	6/21/00 1100	%REC						
	BG NW DMP CELL4	DUPL						
		OID	54830182		54830182		54830182	
89588	C4B BULK8	CONC	36.1		91.2%		84.1%	
	6/21/00 1100	%REC						
	GB NW DMP CELL4	DUPL						
		OID	54830182		54830182		54830182	
BL#01	METHOD BLANK 01	CONC	<8.3		89.5%		90.9%	
		%REC						
		DUPL						
		OID	54830182		54830182		54830182	
BL#02	LCS 01	CONC	1.03		96.7%		95.6%	
		%REC	124.0					
		DUPL						
		OID	54830182		54830182		54830182	

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (60-150 WS))

TclXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(60-150 WS

7/1/00

FILE: 89589

DATE: 11 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 1 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUL  
COMPLETION DATE: 11 JUL

COLUMN.....	1	2	3	4
ANALYTE.....	86	95	100	104
MG/KG.....	TOC	TVS	O&G	TRPH

SAMP # DESCRIPTION

89589	C4B BULK A	CONC	26100	<4	230	190
	6/21/00 1100	%REC				
	GB NW DMP CELL4	DUPL	25700			
		OID	60040187	10150154	55990189	55990191
89590	C4B BULK B	CONC	28500	<4	210	180
	6/21/00 1100	%REC			88.9	88.2
	GB NW DMP CELL4	DUPL				
		OID	60040187	10150154	55990189	55990191
BL#01	METHOD BLANK 01	CONC	<100	<4	<35	8 J
		%REC				
		DUPL				
		OID	60040187	10150154	55990189	55990191
BL#02	LCS 01	CONC	8640	N/A	932	948
		%REC	94.6		91.7	93.3
		DUPL				
		OID	60040187	10150154	55990189	55990191
BL#03	EXTERNAL QC 01	CONC	20700	N/A	N/A	N/A
		%REC				
		DUPL				
		OID	60040187	10150154	55990189	55990191

TOC Total Organic Carbon  
O&G Oil and Grease

TVS Total Volatile Solids  
TRPH Total Recoverable Petroleum Hydrocarbons

## INTERNAL QC DATA

Jobfile Number: 89589  
Project: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 26 JUN 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
89589	89590	100	O&G	88.9	87.7	1.4	55990189
89589	89590	104	TRPH	88.2	86.9	1.5	55990191
89589	BL#02	100	O&G	91.7	91.2	0.5	55990189
89589	BL#02	104	TRPH	93.3	93.0	0.3	55990191

KE-1  
11/01/03  
JOB FILL: 89591

DATE: 10 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRTMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUN  
COMPLETION DATE: 10 JUL

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	290	294	296	297	303	304
UG/KG.....	NAPHTH	ACENAY	ACENAP	FLUORE	PHENAN	ANTRAC

SAMP #	DESCRIPTION							
89591	C4B BULK A	CONC	121	11.1	34.2	49.8	219	43.8
	6/21/00 1100	%REC						
	GB NW DMP CELL4	DUPL						
		QID	08890181	08890181	08890181	08890181	08890181	08890181
89592	C4B BULK B	CONC	126	17.3	48.3	57.0	238	49.3
	6/21/00 1100	%REC	40.0	58.5	62.5	77.5		87.5
	GB NW DMP CELL4	DUPL						
		QID	08890181	08890181	08890181	08890181	08890181	08890181
BL#01	METHOD BLANK 01	CONC	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
		%REC						
		DUPL						
		QID	08890181	08890181	08890181	08890181	08890181	08890181
BL#02	LCS 01	CONC	40.0	43.7	49.0	52.0	53.7	54.7
		%REC	60.0	65.5	73.5	78.0	80.5	82.0
		DUPL						
		QID	08890181	08890181	08890181	08890181	08890181	08890181

NAPHTH Naphthalene  
ACENAP Acenaphthene  
PHENAN Phenanthrene

ACENAY Acenaphthylene  
FLUORE Fluorene  
ANTRAC Anthracene



JOB FILE: 89591

DATE: 10 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUN  
COMPLETION DATE: 10 JUL

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	306	307	309	310	313	314
UG/KG.....	FLANTHE	PYRENE	CHRYSE	BAANTHR	BBFLANT	BKFLANT

SAMP # DESCRIPTION

89591	C4B BULK A	CONC	203	248	133	110	72.5	69.5
	6/21/00 1100	%REC						
	GB NW DMP CELL4	DUPL						
		OID	08890181	08890181	08890181	08890181	08890181	08890181
89592	C4B BULK B	CONC	231	278	163	140	97.7	77.3
	6/21/00 1100	%REC			73.5	85.0	81.5	55.5
	GB NW DMP CELL4	DUPL						
		OID	08890181	08890181	08890181	08890181	08890181	08890181
BL#01	METHOD BLANK 01	CONC	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
		%REC						
		DUPL						
		OID	08890181	08890181	08890181	08890181	08890181	08890181
BL#02	LCS 01	CONC	62.0	54.7	65.0	60.7	52.7	61.0
		%REC	93.0	82.0	97.5	91.0	79.0	91.5
		DUPL						
		OID	08890181	08890181	08890181	08890181	08890181	08890181

FLANTHE Fluoranthene  
CHRYSE Chrysene  
BBFLANT Benzo(b)Fluoranthene

PYRENE Pyrene  
BAANTHR Benzo(a)Anthracene  
BKFLANT Benzo(k)Fluoranthene

JOB FILE: 89591

DATE: 10 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUN  
COMPLETION DATE: 10 JUL

COLUMN.....	13	14	15	16	17	18
ANALYTE.....	315	316	317	318	322	327
UG/KG.....	BAPYRE	I123PYR	DBAHANT	B-GHI-PY	2MeNAPH	2F1BP-S

SAMP # DESCRIPTION

89591	C48 BULK A 6/21/00 1100 GB NW DMP CELL4	CONC	102	75.0	12.6	87.1	145	68.4%
		%REC						
		DUPL						
		OID	08890181	08890181	08890181	08890181	08890181	08890181
89592	C48 BULK B 6/21/00 1100 GB NW DMP CELL4	CONC	133	89.0	18.3	104	146	67.0%
		%REC	62.0	79.5	87.5	76.0	68.0	65.1
		DUPL						
		OID	08890181	08890181	08890181	08890181	08890181	08890181
BL#01	METHOD BLANK 01	CONC	<3.3	<3.3	<3.3	<3.3	<3.3	78.1%
		%REC						
		DUPL						
		OID	08890181	08890181	08890181	08890181	08890181	08890181
BL#02	LCS 01	CONC	51.3	54.3	57.7	65.7	42.7	70.6%
		%REC	77.0	81.5	86.5	98.5	64.0	
		DUPL						
		OID	08890181	08890181	08890181	08890181	08890181	08890181

BAPYRE Benzo(a)Pyrene

DBAHANT Dibenzo(A,H)Anthracene

2MeNAPH 2-Methylnaphthalene

I123PYR Indeno(1,2,3-C,D)Pyrene

B-GHI-PY Benzo(G,H,I)Perylene

2F1BP-S 2-Fluorobiphenyl(Surrogate (30-115 S))

JOB FILE: 89591

DATE: 10 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: D054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 26 JUN :  
COMPLETION DATE: 10 JUL :

COLUMN..... 19  
ANALYTE..... 328  
UG/KG..... PTERP-S

SAMP # DESCRIPTION

RC

89591 C4B BULK A CONC 73.9%  
6/21/00 1100 %REC  
GB NW DMP CELL4 DUPL  
OID 08890181

89592 C4B BULK B CONC 77.0%  
6/21/00 1100 %REC 79.5  
GB NW DMP CELL4 DUPL  
OID 08890181

BL#01 METHOD BLANK 01 CONC 80.2%  
%REC  
DUPL  
OID 08890181

BL#02 LCS 01 CONC 70.5%  
%REC  
DUPL  
OID 08890181

PTERP-S p-Terphenyl-D14(Surrogate (18-137 S))

# INTERNAL QC DATA

Jobfile Number: 89591  
 Project: GREEN BAY MOBILE TRMT PLT - OLIN-ESTES  
 Account Number: 0054PD-92310183  
 Date Received: 26 JUN 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
89591	89592	290	NAPHTH	40.0	51.5	25.1	08890181
89591	89592	294	ACENAY	58.5	58.5	0.0	08890181
89591	89592	296	ACENAP	62.5	60.5	3.3	08890181
89591	89592	297	FLUORE	77.5	75.5	2.6	08890181
89591	89592	304	ANTRAC	87.5	84.0	4.1	08890181
89591	89592	309	CHRYSE	73.5	77.0	4.7	08890181
89591	89592	310	BAANTHR	85.0	94.5	10.6	08890181
89591	89592	313	BBFLANT	81.5	75.5	7.6	08890181
89591	89592	314	BKFLANT	55.5	60.0	7.8	08890181
89591	89592	315	BAPYRE	62.0	67.0	7.8	08890181
89591	89592	316	I123PYR	79.5	79.5	0.0	08890181
89591	89592	317	DBAHANT	87.5	8750.0	196.0	08890181
89591	89592	318	B-GHI-PY	76.0	75.0	1.3	08890181
89591	89592	322	2MeNAPH	68.0	65.5	3.7	08890181
89591	89592	327	2FlBP-S	65.1	65.0	0.2	08890181
89591	89592	328	PTERP-S	79.5	81.1	2.0	08890181

6/03/03  
JOB FILE: 89723

DATE: 03 AUG

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JUL ( )  
COMPLETION DATE: 3 AUG ( )

		COLUMN.....	1	2	3	4	5	6		
		ANALYTE.....	2	4	5	6	7	8		
		MG/KG.....	AS	CD	CR	CU	PB	HG		
SAMP #	DESCRIPTION								RC	
89723	BULK 1,2,3 >2.0	CONC	1.80	0.669	41.3	27.3	40.9	0.625		
		%REC	95.4	91.4	81.2	76.8	99.2	105.2		
		DUPL	1.80	0.699	43.5	29.0	41.9	0.631		
		OID	01260215	01260215	01260215	01260215	01230209	04650199		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
89724	BULK 1,2,3 <2.0	CONC	2.99	1.94	85.2	97.2	51.0	2.20		
		%REC								
		DUPL								
		OID	01260215	01260215	01260215	01260215	01230209	04650199		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
BL#01	METHOD BLANK 01	CONC	<0.200	<0.020	<0.100	0.600	<1.00	<0.040		
		%REC								
		DUPL								
		OID	01260215	01260215	01260215	01260215	01230209	04650199		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
BL#02	LCS 01	CONC	9.40	4.80	19.0	17.4	21.0	0.0752		
		%REC	93.7	96.8	95.0	87.0	105.0	100.3		
		DUPL								
		OID	01260215	01260215	01260215	01260215	01230209	04650199		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
BL#03	EXTERNAL QC 01	CONC	88.3	37.1	22.5	86.9	1140	0.053		
		%REC								
		DUPL								
		OID	01260215	01260215	01260215	01260215	01230209	04650199		
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH			
AS	Arsenic				CD	Cadmium				
CR	Chromium				CU	Copper				
PB	Lead				HG	Mercury				

JOB FILE: 89723

DATE: 03 AUG 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183

RECEIPT DATE: 03 JUL 0

TYPE OF SAMPLE: SEDIMENT

COMPLETION DATE: 3 AUG 0

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

RC

89723	BULK 1,2,3 >2.0	CONC	17.2	0.599	0.400	91.5	70.7	14600	
		%REC	96.2	84.8	94.4	89.2	97.8	230.0	
		DUPL	17.5	0.599	0.400	91.3	71.8	14800	
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
89724	BULK 1,2,3 <2.0	CONC	17.4	0.998	0.599	128	73.5	7850	
		%REC							
		DUPL							
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
BL#01	METHOD BLANK 01	CONC	1.20	<0.200	<0.100	<1.00	<0.100	<2.00	
		%REC							
		DUPL							
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
BL#02	LCS 01	CONC	21.6	4.10	4.50	49.9	51.0	110	
		%REC	108.0	82.8	90.8	99.8	102.0	110.0	
		DUPL							
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				
BL#03	EXTERNAL QC 01	CONC	16.6	1.69	4.49	282	195	24900	
		%REC							
		DUPL							
		OID	01230209	01260215	01260215	01230209	01230209	01230209	
			HGA AUTH		HGA AUTH				

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 89723

DATE: 03 AUG

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JUL  
COMPLETION DATE: 3 AUG

COLUMN.....	13	14
ANALYTE.....	32	33
MG/KG.....	MN	MO

SAMP # DESCRIPTION

89723	BULK 1,2,3 >2.0	CONC	382		0.200	
		%REC	104.0		105.2	
		DUPL	385		0.200	
		OID	01230209		01260215	
		HGA AUTH				
89724	BULK 1,2,3 <2.0	CONC	434		0.699	
		%REC				
		DUPL				
		OID	01230209		01260215	
		HGA AUTH				
BL#01	METHOD BLANK 01	CONC	<0.100		<0.100	
		%REC				
		DUPL				
		OID	01230209		01260215	
		HGA AUTH				
BL#02	LCS 01	CONC	19.6		5.00	
		%REC	98.0		100.2	
		DUPL				
		OID	01230209		01260215	
		HGA AUTH				
BL#03	EXTERNAL QC 01	CONC	492		0.997	
		%REC				
		DUPL				
		OID	01230209		01260215	
		HGA AUTH				

MN Manganese

MO Molybdenum

PK  
-1/17/80

JOB FILE: 89725

DATE: 17 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JUL  
COMPLETION DATE: 17 JUL

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP # DESCRIPTION

89725	BULK 1,2,3 >2.0	CONC	<15.8	<15.8	<15.8	351	<15.8	<15.8
		%REC	74.4					
		DUPL						
		OID	54830193	54830193	54830193	54830193	54830183	54830193
89726	BULK 1,2,3 <2.0	CONC	<27.1	<27.1	<27.1	3278	<27.1	<27.1
		%REC						
		DUPL						
		OID	54830196	54830196	54830196	54830196	54830196	54830196
BL#01	METHOD BLANK 01	CONC	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3
		%REC						
		DUPL						
		OID	54830193	54830193	54830193	54830193	54830183	54830193
BL#02	LCS 01	CONC	0.86	N/A	N/A	N/A	N/A	N/A
		%REC	102.8					
		DUPL						
		OID	54830193	54830193	54830193	54830193	54830183	54830193

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254



JOB FILE: 89725

DATE: 17 JU

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JU  
COMPLETION DATE: 17 JU

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	TclXYL-S	DCLBP

SAMP # DESCRIPTION

89725	BULK 1,2,3 >2.0	CONC	27.3	93.5%	75.3%
		%REC	85.2	88.9	74.4
		DUPL			
		OID	54830193	54830193	54830193

89726	BULK 1,2,3 <2.0	CONC	111	84.0%	84.9%
		%REC			
		DUPL			
		OID	54830196	54830196	54830196

BL#01	METHOD BLANK 01	CONC	<8.3	96.6%	80.1%
		%REC			
		DUPL			
		OID	54830193	54830193	54830193

BL#02	LCS 01	CONC	0.88	99.1%	81.8%
		%REC	106.0		
		DUPL			
		OID	54830193	54830193	54830193

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (60-150 WS))

TclXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(60-150 WS

## INTERNAL QC DATA

Jobfile Number: 89725  
Project: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 03 JUL 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
89725	89725	143	PCB-1260	85.2	84.8	0.5	54830193
89725	89725	145	TclXYL-S	88.9	86.7	2.5	54830193
89725	89725	146	DCLBP	74.4	73.0	1.9	54830193

Page 1

END OF REPORT

JOB FILE: 89727

DATE: 17 JUL (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JUL (

COMPLETION DATE: 17 JUL (

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	290	294	296	297	303	304
UG/KG.....	NAPHTH	ACENAY	ACENAP	FLUORE	PHENAN	ANTRAC

SAMP #	DESCRIPTION							RC
89727	BULK 1,2,3 >2.0	CONC	29.9	<6.4	<6.4	10.8	70.0	10.2
		%REC	46.0	50.0	64.0	67.5	71.5	70.5
		DUPL						
		OID	08890198	08890198	08890198	08890198	08890198	08890198
89728	BULK 1,2,3 <2.0	CONC	513	43.4	72.0	169	1180	215
		%REC						
		DUPL						
		OID	08890198	08890198	08890198	08890198	08890198	08890198
BL#01	METHOD BLANK 01	CONC	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
		%REC						
		DUPL						
		OID	08890198	08890198	08890198	08890198	08890198	08890198
BL#02	LCS 01	CONC	36.0	34.0	44.7	45.3	48.3	43.3
		%REC	54.0	51.0	67.0	68.0	72.5	65.0
		DUPL						
		OID	08890198	08890198	08890198	08890198	08890198	08890198

NAPHTH Naphthalene  
ACENAP Acenaphthene  
PHENAN Phenanthrene

ACENAY Acenaphthylene  
FLUORE Fluorene  
ANTRAC Anthracene

JOB FILE: 89727

DATE: 17 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JUL  
COMPLETION DATE: 17 JUL

		COLUMN.....	7	8	9	10	11	12
		ANALYTE.....	306	307	309	310	313	314
		UG/KG.....	FLANTHE	PYRENE	CHRYSE	BAANTHR	BBFLANT	BKFLANT
SAMP #	DESCRIPTION							
89727	BULK 1,2,3 >2.0	CONC	99.9	82.1	66.2	29.9	53.4	32.4
		XREC	85.0	85.0	88.5	94.5	90.0	78.0
		DUPL						
		OID	08890198	08890198	08890198	08890198	08890198	08890198
89728	BULK 1,2,3 <2.0	CONC	1690	1570	992	720	762	521
		XREC						
		DUPL						
		OID	08890198	08890198	08890198	08890198	08890198	08890198
BL#01	METHOD BLANK 01	CONC	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
		XREC						
		DUPL						
		OID	08890198	08890198	08890198	08890198	08890198	08890198
BL#02	LCS 01	CONC	50.0	42.3	59.3	51.0	60.0	61.0
		XREC	75.0	63.5	89.0	76.5	90.0	91.5
		DUPL						
		OID	08890198	08890198	08890198	08890198	08890198	08890198
FLANTHE	Fluoranthene							
CHRYSE	Chrysene							
BBFLANT	Benzo(b)Fluoranthene							
PYRENE	Pyrene							
BAANTHR	Benzo(a)Anthracene							
BKFLANT	Benzo(k)Fluoranthene							

JOB FILE: 89727

DATE: 17 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TANT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JUL  
COMPLETION DATE: 17 JUL

COLUMN.....	13	14	15	16	17	18
ANALYTE.....	315	316	317	318	322	327
UG/KG.....	BAPYRE	1123PYR	DBAHANT	B-GHI-PY	2MeNAPH	2FLBP-S

SAMP # DESCRIPTION

89727	BULK 1,2,3 >2.0	CONC 35.6	39.4	5.1 J	48.3	31.8	72.6%
		%REC 79.0	92.0	88.0	88.5	56.0	62.5
		DUPL					
		QID 08890198	08890198	08890198	08890198	08890198	08890198
89728	BULK 1,2,3 <2.0	CONC 747	637	105	678	574	52.4%
		%REC					
		DUPL					
		QID 08890198	08890198	08890198	08890198	08890198	08890198
BL#01	METHOD BLANK 01	CONC <3.3	<3.3	<3.3	<3.3	<3.3	77.6%
		%REC					
		DUPL					
		QID 08890198	08890198	08890198	08890198	08890198	08890198
BL#02	LCS 01	CONC 50.0	54.7	60.3	57.7	40.3	67.6%
		%REC 75.0	82.0	90.5	86.5	60.5	
		DUPL					
		QID 08890198	08890198	08890198	08890198	08890198	08890198

BAPYRE Benzo(a)Pyrene

DBAHANT Dibenzo(A,H)Anthracene

2MeNAPH 2-Methylnaphthalene

1123PYR Indeno(1,2,3-C,D)Pyrene

B-GHI-PY Benzo(G,H,I)Perylene

2FLBP-S 2-Fluorobiphenyl(Surrogate (30-115 S))

JOB FILE: 89727

DATE: 17 JUL

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JUL  
COMPLETION DATE: 17 JUL

COLUMN..... 19  
ANALYTE..... 328  
UG/KG..... PTERP-S

SAMP # DESCRIPTION

89727 BULK 1,2,3 >2.0 CONC 64.9%  
%REC 63.5  
DUPL  
OID 08890198

89728 BULK 1,2,3 <2.0 CONC 63.4%  
%REC  
DUPL  
OID 08890198

BL#01 METHOD BLANK 01 CONC 65.2%  
%REC  
DUPL  
OID 08890198

BL#02 LCS 01 CONC 58.8%  
%REC  
DUPL  
OID 08890198

PTERP-S p-Terphenyl-D14(Surrogate (18-137 S))

## INTERNAL QC DATA

Jobfile Number: 89727  
Project: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 03 JUL 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
89727	89727	290	NAPHTH	46.0	56.0	19.6	08890198
89727	89727	294	ACENAY	50.0	49.5	1.0	08890198
89727	89727	296	ACENAP	64.0	67.5	5.3	08890198
89727	89727	297	FLUORE	67.5	67.5	0.0	08890198
89727	89727	303	PHENAN	71.5	73.5	2.8	08890198
89727	89727	304	ANTRAC	70.5	73.0	3.5	08890198
89727	89727	306	FLANTHE	85.0	98.0	14.2	08890198
89727	89727	307	PYRENE	85.0	88.5	4.0	08890198
89727	89727	309	CHRYSE	88.5	89.5	1.1	08890198
89727	89727	310	BAANTHR	94.5	96.0	1.6	08890198
89727	89727	313	BBFLANT	90.0	90.0	0.0	08890198
89727	89727	314	BKFLANT	78.0	74.0	5.3	08890198
89727	89727	315	BAPYRE	79.0	84.0	6.1	08890198
89727	89727	316	I123PYR	92.0	87.0	5.6	08890198
89727	89727	317	DBAHANT	88.0	81.5	7.7	08890198
89727	89727	318	B-GHI-PY	88.5	82.5	7.0	08890198
89727	89727	322	2MeNAPH	56.0	66.0	16.4	08890198
89727	89727	327	2FlBP-S	62.5	69.0	9.9	08890198
89727	89727	328	PTERP-S	63.5	63.9	0.6	08890198

JOB FILE: 89729

DATE: 14 JUL 88

*JKM*  
*7-14-88*

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 1 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 03 JUL 88  
COMPLETION DATE: 14 JUL 88

COLUMN.....	1	2	3	4
ANALYTE.....	86	95	100	104
MG/KG.....	TOC	TVS	O&G	TRPH

SAMP # DESCRIPTION

RC

89729	BULK 1,2,3 >2.0	CONC	27800	<4	67	54 B
		%REC				
		DUPL	28400			
		QID	60040193	10150188	55990189	55990191
89730	BULK 1,2,3 <2.0	CONC	47700	<4	640	350 B
		%REC				
		DUPL				
		QID	60040193	10150188	55990189	55990191
BL#01	METHOD BLANK 01	CONC	<100	<4	<35	8 J
		%REC				
		DUPL				
		QID	60040193	10150188	55990189	55990191
BL#02	LCS 01	CONC	9890	N/A	932	948
		%REC	98.9		91.7	93.3
		DUPL				
		QID	60040193	10150188	55990189	55990191
BL#03	EXTERNAL QC 01	CONC	19000	N/A	N/A	N/A
		%REC				
		DUPL				
		QID	60040193	10150188	55990189	55990191

TOC Total Organic Carbon  
O&G Oil and Grease

TVS Total Volatile Solids  
TRPH Total Recoverable Petroleum Hydrocarbons



## INTERNAL QC DATA

Jobfile Number: 89729  
Project: GREEN BAY MOBILE TRNT PLANT - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 03 JUL 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
89729	BL#02	100	O&G	91.7	91.2	0.5	55990189
89729	BL#02	104	TRPH	93.3	93.0	0.3	55990191

RK  
8/31/00  
JOB FILE: 90789

DATE: 31 AUG 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: NONE

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 15 AUG 0  
COMPLETION DATE: 30 AUG 0

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
PPB.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP #	DESCRIPTION	CONC	1	2	3	4	5	6	RC
90789	GREEN BAY	CONC	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	
	SUPPLY WATER	%REC							
	8/10/00 0930	DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	
BL#01	METHOD BLANK 01	CONC	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
		%REC							
		DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	
BL#02	LCS 01	CONC	0.24	N/A	N/A	N/A	N/A	N/A	
		%REC	96.0						
		DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE: 90789

DATE: 31 AUG C

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: NONE

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 15 AUG C  
COMPLETION DATE: 30 AUG C

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
PPB.....	PCB-1260	TclXYL-S	DCLBP

SAMP # DESCRIPTION

RC

90789	GREEN BAY	CONC	<0.24		67.5%		71.3%	
	SUPPLY WATER	%REC						
	8/10/00 0930	DUPL						
		OID	54830238		54830238		54830238	

BL#01	METHOD BLANK 01	CONC	<0.25		77.9%		75.3%	
		%REC						
		DUPL						
		OID	54830238		54830238		54830238	

BL#02	LCS 01	CONC	0.24		77.8%		74.9%	
		%REC	96.0					
		DUPL						
		OID	54830238		54830238		54830238	

PCB-1260 PCB-1260

TclXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

RK  
8/31/00  
JOB FILE: 90808

DATE: 31 AUG 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG 0  
COMPLETION DATE: 31 AUG 0

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP #	DESCRIPTION						RC
90808	GREEN BAY	CONC	<8.69	<8.69	<8.69	143	<8.69
	1400-1 8/10/00	%REC	134.8				
	UNDERFLOW	DUPL					
		QID	54830238	54830238	54830238	54830238	54830238
90809	GREEN BAY	CONC	<9.08	<9.08	<9.08	154	<9.08
	1400-2 8/10/00	%REC					
	UNDERFLOW	DUPL					
		QID	54830238	54830238	54830238	54830238	54830238
90810	GREEN BAY	CONC	<9.37	<9.37	<9.37	88.3	<9.37
	1505-1 8/10/00	%REC					
	UNDERFLOW	DUPL					
		QID	54830238	54830238	54830238	54830238	54830238
90811	GREEN BAY	CONC	<8.80	<8.80	<8.80	126	<8.80
	1505-2 8/10/00	%REC					
	UNDERFLOW	DUPL					
		QID	54830238	54830238	54830238	54830238	54830238
90812	GREEN BAY	CONC	<8.88	<8.88	<8.88	153	<8.88
	1525-1 8/10/00	%REC					
	UNDERFLOW	DUPL					
		QID	54830238	54830238	54830238	54830238	54830238
90813	GREEN BAY	CONC	<8.93	<8.93	<8.93	160	<8.93
	1525-2 8/10/00	%REC					
	UNDERFLOW	DUPL					
		QID	54830238	54830238	54830238	54830238	54830238

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE: 90808

DATE: 31 AUG

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG  
COMPLETION DATE: 31 AUG

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP #	DESCRIPTION								
90814	GREEN BAY 1625-1 8/10/00 UNDERFLOW	CONC	<9.21	<9.21	<9.21	154	<9.21	<9.21	
		%REC							
		DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	
90815	GREEN BAY 1625-2 8/10/00 UNDERFLOW	CONC	<9.02	<9.02	<9.02	180	<9.02	<9.02	
		%REC							
		DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	
90816	GREEN BAY 1715-1 8/10/00 UNDERFLOW	CONC	<8.60	<8.60	<8.60	130	<8.60	<8.60	
		%REC							
		DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	
90817	GREEN BAY 1715-2 8/10/00 UNDERFLOW	CONC	<8.87	<8.87	<8.87	152	<8.87	<8.87	
		%REC							
		DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	
90818	GREEN BAY FEED 1400-1 8/10/00	CONC	<16.3	<16.3	<16.3	2565	<16.3	<16.3	
		%REC							
		DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	
90819	GREEN BAY FEED 1501-1 8/10/00	CONC	<17.4	<17.4	<17.4	2999	<17.4	<17.4	
		%REC							
		DUPL							
		OID	54830238	54830238	54830238	54830238	54830238	54830238	
PCB-1016	PCB-1016								
PCB-1232	PCB-1232								
PCB-1248	PCB-1248								
PCB-1221	PCB-1221								
PCB-1242	PCB-1242								
PCB-1254	PCB-1254								

JOB FILE: 9080R

DATE: 31 AUG 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 17 AUG 1  
COMPLETION DATE: 31 AUG 1

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP # DESCRIPTION

RI

90820	GREEN BAY FEED 1525-1 8/10/00	CONC <13.2 %REC DUPL OID 54830238	<13.2   54830238	<13.2   54830238	2137   54830238	<13.2   54830238	<13.2   54830238
90821	GREEN BAY FEED 1625-1 8/10/00	CONC <14.2 %REC DUPL OID 54830238	<14.2   54830238	<14.2   54830238	2108   54830238	<14.2   54830238	<14.2   54830238
90822	GREEN BAY FEED 1715-1 8/10/00	CONC <12.1 %REC DUPL OID 54830238	<12.1   54830238	<12.1   54830238	1969   54830238	<12.1   54830238	<12.1   54830238
BL#01	METHOD BLANK 01	CONC <6.25 %REC DUPL OID 54830238	<6.25   54830238	<6.25   54830238	<6.25   54830238	<6.25   54830238	<6.25   54830238
BL#02	LCS 01	CONC 0.625 %REC 100.0 DUPL OID 54830238	N/A   54830238	N/A   54830238	N/A   54830238	N/A   54830238	N/A   54830238

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB. FILE: 90808

DATE: 31 AUG (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - CLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG (

COMPLETION DATE: 31 AUG (

COLUMN.....	7	8	9	10
ANALYTE.....	143	145	146	900
UG/KG.....	PCB-1260	TcIXYL-S	DCLBP	% MOISTU

SAMP # DESCRIPTION Rc

90808	GREEN BAY	CONC	13.7	83.2%	83.5%	16%
	1400-1 8/10/00	%REC	89.6	81.6	65.8	
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234

90809	GREEN BAY	CONC	21.2	80.5%	87.0%	19.1%
	1400-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234

90810	GREEN BAY	CONC	7.48 J	82.8%	76.6%	21.6%
	1505-1 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234

90811	GREEN BAY	CONC	3.69 J	82.4%	74.8%	16.6%
	1505-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234

90812	GREEN BAY	CONC	7.23 J	87.3%	74.7%	18.1%
	1525-1 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234

90813	GREEN BAY	CONC	14.9	85.5%	86.6%	18.5%
	1525-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

TcIXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

% MOISTU PERCENT MOISTURE

JOB FILE: 90808

DATE: 31 AUG 1990

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 17 AUG 1990  
COMPLETION DATE: 31 AUG 1990

COLUMN.....	7	8	9	10
ANALYTE.....	143	145	146	900
UG/KG.....	PCB-1260	TcLXYL-S	DCLBP	% MOISTU

SAMP # DESCRIPTION

90814	GREEN BAY	CONC	14.5	79.4%	90.8%	21.2%
	1625-1 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234
90815	GREEN BAY	CONC	12.4	78.4%	71.4%	19.7%
	1625-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234
90816	GREEN BAY	CONC	14.3	76.6%	91.2%	16.0%
	1715-1 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234
90817	GREEN BAY	CONC	9.70	74.8%	66.8%	17.3%
	1715-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	54830238	54830238	54830238	55150234
90818	GREEN BAY FEED	CONC	164	81.2%	91.4%	52.5%
	1400-1 8/10/00	%REC				
		DUPL				
		OID	54830238	54830238	54830238	55150234
90819	GREEN BAY FEED	CONC	236	80.9%	97.1%	55.5%
	1501-1 8/10/00	%REC				
		DUPL				
		OID	54830238	54830238	54830238	55150234

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

TcLXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

% MOISTU PERCENT MOISTURE



JOB FILE: 90808

DATE: 31 AUG 00

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG 00  
COMPLETION DATE: 31 AUG 00

COLUMN.....	7	8	9	10
ANALYTE.....	143	145	146	900
UG/KG.....	PCB-1260	TeIXYL-S	DCLBP	% MOISTU

SAMP #	DESCRIPTION					RC
90820	GREEN BAY FEED 1525-1 8/10/00	CONC 166 %REC DUPL OID 54830238	78.3%     54830238	98.7%     54830238	41.1%     55150234	1
90821	GREEN BAY FEED 1625-1 8/10/00	CONC 160 %REC DUPL OID 54830238	79.2%     54830238	86.2%     54830238	44.9%     55150234	1
90822	GREEN BAY FEED 1715-1 8/10/00	CONC 163 %REC DUPL OID 54830238	78.8%     54830238	90.5%     54830238	36.3%     55150234	
BL#01	METHOD BLANK 01	CONC <6.25 %REC DUPL OID 54830238	95.2%     54830238	83.1%     54830238	N/A     55150234	
BL#02	LCS 01	CONC 0.635 %REC 101.6 DUPL OID 54830238	95.7%     54830238	81.3%     54830238	N/A     55150234	

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

TeIXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS)  
% MOISTU PERCENT MOISTURE

## INTERNAL QC DATA

Jobfile Number: 90808  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 17 AUG 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
90808	90808	137	PCB-1016	134.8	154.4	13.6	54830238
90808	90808	143	PCB-1260	89.6	97.2	8.1	54830238
90808	90808	145	TclXYL-S	81.6	87.2	6.6	54830238
90808	90808	146	DCLBP	65.8	78.1	17.1	54830238

JOB FILE: 90823

DATE: 23 OCT (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG (

COMPLETION DATE: 23 OCT (

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

90823	GREEN BAY	CONC	0.600	0.030	3.10	2.80	2.60	<0.040
	1400-1 8/10/00	%REC	91.4	96.2	104.2	100.0	105.6	96.0
	UNDERFLOW	DUPL	0.600	0.030	3.10	2.80	2.60	<0.040
		OID	01260269	01260269	01260269	01260269	01260269	04650252
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90824	GREEN BAY	CONC	0.499	0.300	2.90	2.70	2.50	<0.040
	1400-2 8/10/00	%REC						
	UNDERFLOW	DUPL						
		OID	01260269	01260269	01260269	01260269	01260269	04650252
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90825	GREEN BAY	CONC	0.468	0.030	2.09	6.38	2.19	<0.040
	1501-1 8/10/00	%REC						
	UNDERFLOW	DUPL						
		OID	04360291	04360292	01230286	01230286	01230286	04650252
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90826	GREEN BAY	CONC	0.400	0.020	2.50	1.30	2.10	<0.040
	1505-2 8/10/00	%REC						
	UNDERFLOW	DUPL						
		OID	01260269	01260269	01230286	01260269	01230286	04650252
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90827	GREEN BAY	CONC	0.499	0.0399	3.49	6.49	2.99	<0.040
	1525-1 8/10/00	%REC						
	UNDERFLOW	DUPL						
		OID	01260269	01260269	01230286	01260269	01230286	04650252
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90828	GREEN BAY	CONC	0.499	0.0299	3.49	3.99	2.70	<0.040
	1525-2 8/10/00	%REC						
	UNDERFLOW	DUPL						
		OID	01260269	01260269	01230286	01260269	01230286	04650252
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	

AS Arsenic  
CR Chromium  
PB Lead

CD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 90823

DATE: 23 OCT 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 17 AUG 0  
COMPLETION DATE: 23 OCT 0

		COLUMN.....	1	2	3	4	5	6	RE
		ANALYTE.....	2	4	5	6	7	8	
		MG/KG.....	AS	CD	CR	CU	PB	HG	
SAMP #	DESCRIPTION								
90829	GREEN BAY 1625-1 8/10/00 UNDERFLOW	CONC 0.399 XREC DUPL OID 01260269	0.020   01260269 HGA AUTH	2.30   01230286 HGA AUTH	1.20   01260269 HGA AUTH	2.10   01230286 HGA AUTH	<0.040   04650252		
90830	GREEN BAY 1625-2 8/10/00 UNDERFLOW	CONC 0.580 XREC DUPL OID 04360291	0.050   04360262 HGA AUTH	3.40   01230286 HGA AUTH	2.10   01260269 HGA AUTH	3.00   01230286 HGA AUTH	<0.040   04650252		
90831	GREEN BAY 1715-1 8/10/00 UNDERFLOW	CONC 0.529 XREC 109.3 DUPL 0.569 OID 04360291	0.033 104.5 0.034 04360262 HGA AUTH	3.39 100.6 3.39 01230286 HGA AUTH	2.20 97.6 1.60 01260269 HGA AUTH	5.09 100.0 4.59 01230286 HGA AUTH	<0.040 98.0 <0.040 04650252		
90832	GREEN BAY 1715-2 8/10/00 UNDERFLOW	CONC 0.410 XREC DUPL OID 04360291	0.038   04360262 HGA AUTH	2.30   01230286 HGA AUTH	4.70   01260269 HGA AUTH	4.10   01230286 HGA AUTH	<0.040   04650252		
90833	GREEN BAY FEED 1400-1 8/10/00	CONC 4.55 XREC DUPL OID 04360291	0.820   04360262 HGA AUTH	58.6   01230286 HGA AUTH	61.3   01260269 HGA AUTH	57.0   01230286 HGA AUTH	1.27   04650252		
90834	GREEN BAY FEED 1505-1 8/10/00	CONC 3.99 XREC DUPL OID 04360291	0.733   04360262 HGA AUTH	52.2   01230286 HGA AUTH	51.2   01260269 HGA AUTH	53.5   01230286 HGA AUTH	1.35   04650252		
AS	Arsenic			CD	Cadmium				
CR	Chromium			CU	Copper				
PB	Lead			HG	Mercury				

JOB FILE: 90823

DATE: 23 OCT (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG (

COMPLETION DATE: 23 OCT (

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP #	DESCRIPTION							RE
90835	GREEN BAY FEED 1525-1 8/10/00	CONC 1.42	0.250	15.2	15.9	16.6	0.378	
		%REC						
		DUPL						
		OID 04360291	04360262 HGA AUTH	01230286 HGA AUTH	01260269 HGA AUTH	01230286 HGA AUTH	04650252	
90836	GREEN BAY FEED 1625-1 8/10/00	CONC 2.93	0.640	45.5	39.8	45.1	0.900	
		%REC						
		DUPL						
		OID 04360291	04360262 HGA AUTH	01230286 HGA AUTH	01260269 HGA AUTH	01230286 HGA AUTH	04650252	
90837	GREEN BAY FEED 1715-1 8/10/00	CONC 1.98	0.380	26.3	25.5	25.6	0.470	
		%REC						
		DUPL						
		OID 04360291	04360262 HGA AUTH	01230286 HGA AUTH	01260269 HGA AUTH	01230286 HGA AUTH	04650252	
BL#01	METHOD BLANK 01	CONC <0.200	<0.020	<0.100	0.100	0.100	<0.040	
		%REC						
		DUPL						
		OID 04360291	01260269 HGA AUTH	01230286 HGA AUTH	01260269 HGA AUTH	01230286 HGA AUTH	04650252	
BL#02	LCS 01	CONC 9.50	4.99	22.4	21.8	11.5	0.072	
		%REC 94.5	99.8	112.0	109.0	115.0	96.0	
		DUPL						
		OID 04360291	01260269 HGA AUTH	01230286 HGA AUTH	01260269 HGA AUTH	01230286 HGA AUTH	04650252	
BL#03	EXTERNAL QC 01	CONC 79.1	36.8	16.6	112	119	0.054	
		%REC					90.0	
		DUPL						
		OID 04360291	01260269 HGA AUTH	01230286 HGA AUTH	01260269 HGA AUTH	01230286 HGA AUTH	04650252	
AS	Arsenic			CD	Cadmium			
CR	Chromium			CU	Copper			
PB	Lead			HG	Mercury			

JOB FILE: 90823

DATE: 23 OCT 1981

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 17 AUG 1981  
COMPLETION DATE: 14 SEP 1981

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP #: DESCRIPTION

R1

90823	GREEN BAY	CONC	2.40	<0.200	0.100	5.50	9.29	1830
	1400-1 8/10/00	%REC	101.0	84.0	100.0	84.4	96.2	80.0
	UNDERFLOW	DUPL	2.40	<0.200	0.100	5.50	9.49	1820
		QID	01260269	01260269	01260269	01260269	01260269	01260269
			HGA AUTH		HGA AUTH			
90824	GREEN BAY	CONC	2.40	0.200	0.300	5.09	4.99	1730
	1400-2 8/10/00	%REC						
	UNDERFLOW	DUPL						
		QID	01260269	01260269	01260269	01260269	01260269	01260269
			HGA AUTH		HGA AUTH			
90825	GREEN BAY	CONC	3.09	<0.200	<0.100	5.08	3.19	1540
	1501-1 8/10/00	%REC						
	UNDERFLOW	DUPL						
		QID	01230286	04360291	04360297	01230286	01230286	01230286
			HGA AUTH		HGA AUTH			
90826	GREEN BAY	CONC	2.00	<0.200	0.100	4.59	3.70	1400
	1505-2 8/10/00	%REC						
	UNDERFLOW	DUPL						
		QID	01230286	01260269	01260269	01230286	01230286	01230286
			HGA AUTH		HGA AUTH			
90827	GREEN BAY	CONC	2.40	<0.200	0.100	5.69	5.09	2070
	1525-1 8/10/00	%REC						
	UNDERFLOW	DUPL						
		QID	01230286	01260269	01260269	01230286	01230286	01230286
			HGA AUTH		HGA AUTH			
90828	GREEN BAY	CONC	2.30	<0.200	0.100	5.99	5.99	1910
	1525-2 8/10/00	%REC						
	UNDERFLOW	DUPL						
		QID	01230286	01260269	01260269	01230286	01230286	01230286
			HGA AUTH		HGA AUTH			

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 90823

DATE: 23 OCT (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG (

COMPLETION DATE: 14 SEP (

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP #	DESCRIPTION							
90829	GREEN BAY 1625-1 8/10/00 UNDERFLOW	CONC 1.80 %REC DUPL OID 01230286 HGA AUTH	<0.200     01260269	0.100     01260269 HGA AUTH	4.79     01230286	3.69     01230286	1400     01230286	
90830	GREEN BAY 1625-2 8/10/00 UNDERFLOW	CONC 3.10 %REC DUPL OID 01230286 HGA AUTH	<0.200     01260269	<0.100     04360297 HGA AUTH	6.79     01230286	5.59     01230286	2510     01230286	
90831	GREEN BAY 1715-1 8/10/00 UNDERFLOW	CONC 3.49 %REC 99.2 DUPL 3.29 OID 01230286 HGA AUTH	<0.200   93.8 <0.200 04360291	<0.100   102.0 <0.100 04360297 HGA AUTH	5.99   93.4 5.89 01230286	5.19   101.2 5.09 01230286	2580   93.0 2530 01230286	
90832	GREEN BAY 1715-2 8/10/00 UNDERFLOW	CONC 2.80 %REC DUPL OID 01230286 HGA AUTH	<0.200     04360291	<0.100     04360297 HGA AUTH	4.80     01230286	3.80     01230286	1820     01230286	
90833	GREEN BAY FEED 1400-1 8/10/00	CONC 23.7 %REC DUPL OID 01230286 HGA AUTH	0.799     04360291	0.449     04360297 HGA AUTH	120     01230286	95.7     01230286	20600     01230286	
90834	GREEN BAY FEED 1505-1 8/10/00	CONC 22.5 %REC DUPL OID 01230286 HGA AUTH	0.799     04360291	0.410     04360297 HGA AUTH	101     01230286	82.1     01230286	18600     01230286	

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 90823

DATE: 23 OCT 1991

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 17 AUG 1991  
COMPLETION DATE: 14 SEP 1991

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE
SAMP #	DESCRIPTION					
90835	GREEN BAY FEED 1525-1 8/10/00	CONC 9.18 %REC DUPL QID 01230286 HGA AUTH	0.240 04360291	0.120 04360293 HGA AUTH	30.2 01230286	24.0 01230286 6100 01230286
90836	GREEN BAY FEED 1625-1 8/10/00	CONC 15.8 %REC DUPL QID 01230286 HGA AUTH	0.540 04360291	0.370 04360293 HGA AUTH	85.3 01230286	65.9 01230286 14400 01230286
90837	GREEN BAY FEED 1715-1 8/10/00	CONC 11.0 %REC DUPL QID 01230286 HGA AUTH	0.340 04360291	0.200 04360293 HGA AUTH	51.4 01230286	40.5 01230286 9810 01230286
BL#01	METHOD BLANK 01	CONC 0.100 %REC DUPL QID 01230286 HGA AUTH	<0.200 01260269	<0.100 01260269 HGA AUTH	<1.00 01230286	<0.100 01230286 2.40 01230286
BL#02	LCS 01	CONC 21.9 %REC 109.5 DUPL QID 01230286 HGA AUTH	4.10 82.0 01260269	4.60 92.4 01260269 HGA AUTH	43.7 87.4 01230286	50.6 101.2 01230286 101 101.0 01230286
BL#03	EXTERNAL QC 01	CONC 15.9 %REC DUPL QID 01230286 HGA AUTH	1.40 01260269	3.90 01260269 HGA AUTH	281 01230286	185 01230286 20300 01230286
NI	Nickel		SE	Selenium		
AG	Silver		ZN	Zinc		
BA	Barium		FE	Iron		



JOB FILE: 90823

DATE: 23 OCT (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 7 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG (

COMPLETION DATE: 14 SEP (

COLUMN..... 13                      14  
ANALYTE..... 32                      33  
MG/KG..... MN                      MO

SAMP #    DESCRIPTION

R

90823	GREEN BAY	CONC	48.8		0.100	
	1400-1 8/10/00	%REC	99.0		102.2	
	UNDERFLOW	DUPL	48.3		0.100	
		OID	01260269		01260269	
		HGA AUTH				
90824	GREEN BAY	CONC	60.5		0.100	
	1400-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	01260269		01260269	
		HGA AUTH				
90825	GREEN BAY	CONC	34.9		<1.00	
	1501-1 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	01230286		01260269	
		HGA AUTH				
90826	GREEN BAY	CONC	44.9		<1.00	
	1505-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	01230286		01260269	
		HGA AUTH				
90827	GREEN BAY	CONC	56.6		0.100	
	1525-1 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	01230286		01260269	
		HGA AUTH				
90828	GREEN BAY	CONC	48.5		0.100	
	1525-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	01230286		01260269	
		HGA AUTH				

MN            Manganese

MO            Molybdenum

JOB FILE: 90823

DATE: 23 OCT (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 8 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG (

COMPLETION DATE: 14 SEP (

COLUMN.....	13	14
ANALYTE.....	32	33
MG/KG.....	MN	MO

SAMP # DESCRIPTION

90829	GREEN BAY	CONC	40.3	<0.100	
	1625-1 8/10/00	%REC			
	UNDERFLOW	DUPL			
		OID	01230286	01260269	
			HGA AUTH		
90830	GREEN BAY	CONC	46.6	<0.100	
	1625-2 8/10/00	%REC			
	UNDERFLOW	DUPL			
		OID	01230286	01260269	
			HGA AUTH		
90831	GREEN BAY	CONC	51.3	<1.00	
	1715-1 8/10/00	%REC	108.2	102.4	
	UNDERFLOW	DUPL	49.5	<1.00	
		OID	01230286	01260269	
			HGA AUTH		
90832	GREEN BAY	CONC	44.7	<1.00	
	1715-2 8/10/00	%REC			
	UNDERFLOW	DUPL			
		OID	01230286	01260269	
			HGA AUTH		
90833	GREEN BAY FEED	CONC	442	1.30	
	1400-1 8/10/00	%REC			
		DUPL			
		OID	01230286	01260269	
			HGA AUTH		
90834	GREEN BAY FEED	CONC	349	1.10	
	1505-1 8/10/00	%REC			
		DUPL			
		OID	01230286	01260269	
			HGA AUTH		

MN Manganese

MO Molybdenum

JOB FILE: 90823

DATE: 23 OCT 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 9 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG 1  
COMPLETION DATE: 14 SEP 1

COLUMN.....	13	14
ANALYTE.....	32	33
MG/KG.....	MN	MO

SAMP # DESCRIPTION

90835	GREEN BAY FEED 1525-1 8/10/00	CONC 137 %REC DUPL OID 01230286 HGA AUTH	<1.00       01260269 
90836	GREEN BAY FEED 1625-1 8/10/00	CONC 257 %REC DUPL OID 01230286 HGA AUTH	<1.00       01260269 
90837	GREEN BAY FEED 1715-1 8/10/00	CONC 180 %REC DUPL OID 01230286 HGA AUTH	<1.00       01260269 
BL#01	METHOD BLANK 01	CONC <0.100 %REC DUPL OID 01230286 HGA AUTH	<1.00       01260269 
BL#02	LCS 01	CONC 22.8 %REC 114.0 DUPL OID 01230286 HGA AUTH	N/A       01260269 
BL#03	EXTERNAL QC 01	CONC 539 %REC DUPL OID 01230286 HGA AUTH	0.400       01260269 

MN Manganese

MO Molybdenum

RK  
8/3/00

JOB FILE: 90838

DATE: 30 AUG 00

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG 00  
COMPLETION DATE: 30 AUG 00

COLUMN.....	1	2	3	4
ANALYTE.....	86	95	100	104
MG/KG.....	TOC	TVS	O&G	TRPH

SAMP. # DESCRIPTION

RC

90838	GREEN BAY	CONC	1130	<4	<38.0	<38.0
	1400-1 8/10/00	%REC			88.5	91.9
	UNDERFLOW	DUPL	1350			
		OID	60040240	10150235	55990239	55990242
90839	GREEN BAY	CONC	391	<4	16.0 J	<43
	1400-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	60040240	10150235	55990239	55990242
90840	GREEN BAY	CONC	412	<4	<44.0	<44.0
	1505-1 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	60040240	10150235	55990239	55990242
90841	GREEN BAY	CONC	682	<4	<41.0	<41.0
	1505-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	60040240	10150235	55990239	55990242
90842	GREEN BAY	CONC	530	<4	21.0 J	<43
	1525-1 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	60040240	10150235	55990239	55990242
90843	GREEN BAY	CONC	1620	<4	13.0 J	<43
	1525-2 8/10/00	%REC				
	UNDERFLOW	DUPL				
		OID	60040240	10150235	55990239	55990242

TOC Total Organic Carbon  
O&G Oil and Grease

TVS Total Volatile Solids  
TRPH Total Recoverable Petroleum Hydrocarbons

JOB FILE: 90838

DATE: 30 AUG C

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 17 AUG C  
COMPLETION DATE: 30 AUG C

COLUMN.....	1	2	3	4
ANALYTE.....	86	95	100	104
MG/KG.....	TOC	TVS	O&G	TRPH

SAMP #	DESCRIPTION					RC
90844	GREEN BAY 1625-1 8/10/00 UNDERFLOW	CONC 765 %REC DUPL QID 60040240	<4     10150235	23.0 J     55990239	<44     55990242	
90845	GREEN BAY 1625-2 8/10/00 UNDERFLOW	CONC 2570 %REC DUPL QID 60040240	<4     10150235	10.0 J     55990239	<43     55990242	
90846	GREEN BAY 1715-1 8/10/00 UNDERFLOW	CONC 850 %REC DUPL QID 60040240	<4     10150235	10.0 J     55990239	<41     55990242	
90847	GREEN BAY 1715-2 8/10/00 UNDERFLOW	CONC 1240 %REC DUPL QID 60040240	<4     10150235	<42.0     55990239	<42     55990242	
90848	GREEN BAY FEED 1400-1 8/10/00	CONC 28900 %REC DUPL QID 60040240	<4     10150235	200     55990239	160     55990242	
90849	GREEN BAY FEED 1505-1 8/10/00	CONC 35800 %REC DUPL QID 60040240	<4     10150235	460     55990239	370     55990242	

TOC Total Organic Carbon  
O&G Oil and Grease

TVS Total Volatile Solids  
TRPH Total Recoverable Petroleum Hydrocarbons

JOB FILE: 90838

DATE: 30 AUG 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 17 AUG 1  
COMPLETION DATE: 30 AUG 1

COLUMN.....	1	2	3	4
ANALYTE.....	86	95	100	104
MG/KG.....	TOC	TVS	O&G	TRPH

SAMP #	DESCRIPTION						
90850	GREEN BAY FEED	CONC	21300	<4	270	200	
	1525-1 8/10/00	%REC					
		DUPL					
		OID	60040240	10150235	55990239	55990242	
90851	GREEN BAY FEED	CONC	30400	<4	280	230	
	1625-1 8/10/00	%REC					
		DUPL					
		OID	60040240	10150235	55990239	55990242	
90852	GREEN BAY FEED	CONC	14400	<4	370	280	
	1715-1 8/10/00	%REC					
		DUPL		<4			
		OID	60040240	10150235	55990239	55990242	
BL#01	METHOD BLANK 01	CONC	<100	<4	<35	<35	
		%REC					
		DUPL					
		OID	60040240	10150235	55990239	55990242	
BL#02	LCS 01	CONC	10300	N/A	868	902	
		%REC	103.0		87.1	90.5	
		DUPL					
		OID	60040240	10150235	55990239	55990242	
BL#03	EXTERNAL QC 01	CONC	20500	N/A	N/A	N/A	
		%REC	91.1				
		DUPL					
		OID	60040240	10150235	55990239	55990242	
TOC	Total Organic Carbon			TVS	Total Volatile Solids		
O&G	Oil and Grease			TRPH	Total Recoverable Petroleum Hydrocarbons		

## INTERNAL QC DATA

Jobfile Number: 90838  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 17 AUG 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
90838	90838	100	O&G	88.5	87.4	1.3	55990239
90838	90838	104	TRPH	91.9	91.0	1.0	55990242

JOP FILE: 90853

DATE: 26 SE

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES

JOB NUMBER: 0054PD-92310183

RECEIPT DATE: 17 AU

CHEM. PRESERVATIVE:

TYPE OF SAMPLE: WATER

COMPLETION DATE: 26 SE

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
PPB.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP # DESCRIPTION

90853	GREEN BAY 1400-1 8/10/00 OVERFLOW	CONC <0.27 %REC 118.8 DUPL OID 54830238	<0.27   54830238	<0.27   54830238	0.27   54830238	<0.27   54830238	<0.27   54830238
90854	GREEN BAY 1505-1 8/10/00 OVERFLOW	CONC <0.24 %REC DUPL OID 54830238	<0.24   54830238	<0.24   54830238	0.28   54830238	<0.24   54830238	<0.24   54830238
90855	GREEN BAY 1525 8/10/00 OVERFLOW	CONC <0.25 %REC DUPL OID 54830238	<0.25   54830238	<0.25   54830238	0.25 J   54830238	<0.25   54830238	<0.25   54830238
90856	GREEN BAY 1625-1 8/10/00 OVERFLOW	CONC <0.24 %REC DUPL OID 54830238	<0.24   54830238	<0.24   54830238	0.18 J   54830238	<0.24   54830238	<0.24   54830238
90857	GREEN BAY 1715-1 8/10/00 OVERFLOW	CONC <0.25 %REC DUPL OID 54830238	<0.25   54830238	<0.25   54830238	0.22 J   54830238	<0.25   54830238	<0.25   54830238
90858	GREEN BAY FEED 1400-1 8/10/00	CONC <0.24 %REC DUPL OID 54830238	<0.24   54830238	<0.24   54830238	0.29   54830238	<0.24   54830238	<0.24   54830238

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254



JCE FILE: 90853

DATE: 26 SEP

## \*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 17 AUG  
COMPLETION DATE: 26 SEP

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
PPB.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP #	DESCRIPTION							
90859	GREEN BAY FEED 1505-1 8/10/00	CONC <0.23 %REC DUPL OID 54830238	<0.23   54830238	<0.23   54830238	0.27   54830238	<0.23   54830238	<0.23   54830238	
90860	GREEN BAY FEED 1525-1 8/10/00	CONC <0.20 %REC DUPL OID 54830238	<0.20   54830238	<0.20   54830238	0.27   54830238	<0.20   54830238	<0.20   54830238	
90861	GREEN BAY FEED 1625-1 8/10/00	CONC <0.24 %REC DUPL OID 54830238	<0.24   54830238	<0.24   54830238	0.36   54830238	<0.24   54830238	<0.24   54830238	
90862	GREEN BAY FEED 1715-1 8/10/00	CONC <0.24 %REC DUPL OID 54830238	<0.24   54830238	<0.24   54830238	0.41   54830238	<0.24   54830238	<0.24   54830238	1
BL#01	METHOD BLANK 01	CONC <0.25 %REC DUPL OID 54830238	<0.25   54830238	<0.25   54830238	<0.25   54830238	<0.25   54830238	<0.25   54830238	1
BL#02	LCS 01	CONC 0.25 %REC 99.6 DUPL OID 54830238	N/A   54830238	N/A   54830238	N/A   54830238	N/A   54830238	N/A   54830238	12

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE: 90853

DATE: 26 SE

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 17 AUG  
COMPLETION DATE: 26 SEP

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
PPB.....	PCB-1260	TcLXYL-S	DCLBP

SAMP #	DESCRIPTION				
90853	GREEN BAY	CONC	<0.27	60.0%	66.9%
	1400-1 8/10/00	%REC	88.8	65.6	65.4
	OVERFLOW	DUPL			
		OID	54830238	54830238	54830238
90854	GREEN BAY	CONC	<0.24	63.7%	66.9%
	1505-1 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	54830238	54830238	54830238
90855	GREEN BAY	CONC	<0.25	62.8%	66.7%
	1525 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	54830238	54830238	54830238
90856	GREEN BAY	CONC	<0.24	70.4%	70.0%
	1625-1 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	54830238	54830238	54830238
90857	GREEN BAY	CONC	<0.25	65.8%	68.8%
	1715-1 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	54830238	54830238	54830238
90858	GREEN BAY FEED	CONC	<0.24	62.4%	69.6%
	1400-1 8/10/00	%REC			
		DUPL			
		OID	54830238	54830238	54830238

PCB-1260 PCB-1260  
DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

TcLXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

JOB FILE: 90853

DATE: 26 SE

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 17 AUG  
COMPLETION DATE: 26 SEP

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
PPB.....	PCB-1260	Tc1XYL-S	DCLBP

SAMP # DESCRIPTION

90859	GREEN BAY FEED 1505-1 8/10/00	CONC <0.23 %REC DUPL OID 54830238	66.9%       54830238	67.3%       54830238	     
90860	GREEN BAY FEED 1525-1 8/10/00	CONC <0.20 %REC DUPL OID 54830238	65.0%       54830238	67.2%       54830238	     
90861	GREEN BAY FEED 1625-1 8/10/00	CONC <0.24 %REC DUPL OID 54830238	81.4%       54830238	70.8%       54830238	     
90862	GREEN BAY FEED 1715-1 8/10/00	CONC <0.24 %REC DUPL OID 54830238	77.2%       54830238	69.8%       54830238	     
BL#01	METHOD BLANK 01	CONC <0.25 %REC DUPL OID 54830238	60.5%       54830238	62.0%       54830238	     
BL#02	LCS 01	CONC 0.22 %REC 88.0 DUPL OID 54830238	70.3%       54830238	67.8%       54830238	     

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

Tc1XYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

## INTERNAL QC DATA

Jobfile Number: 90853  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 17 AUG 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
90853	90853	137	PCB-1016	118.8	129.2	8.4	54830238
90853	90853	143	PCB-1260	88.8	112.0	23.1	54830238
90853	90853	145	TclXYL-S	65.6	65.5	0.2	54830238
90853	90853	146	DCLBP	65.4	64.7	1.1	54830238

Job Description: <u>GREEN BAY - OLIN-ESTES</u>		Job File Number: <u>90853</u>
<b>ECB Quality Assurance Corrective Action Form</b>		
17		
Analysis: <u>PCB</u>	Date: <u>26-September-00</u>	
Analyst: <u>A. MORROW</u>	Instrument: _____	
<p>Problem:     Instrument integrated incorrectly because of low responses or concentrations.</p>  <p>Sample Number(s) Affected:     90853-90862</p> <p>Recommended Corrective Action:     Re-integrate manually</p>   		
<p>Corrective Action Taken By Analyst:     Same as above.</p>   <p>Comments:     Re-integrated manually and reported values. If there are questions, please call.</p>   		
Date Corrective Action Taken: <u>26-September-00</u>		
Reviewed by: <u>[Signature]</u>		<u>[Signature]</u>

22 February 98

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JOB FILE: 90883

DATE: 26 SEP

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG  
COMPLETION DATE: 26 SEP

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
PCB.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254
SAMP #	DESCRIPTION					
90883	GREEN BAY	CONC	<0.25	<0.25	<0.25	<0.25
	1400-2 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	54830255	54830255	54830255	54830255
90884	GREEN BAY	CONC	<0.24	<0.24	<0.24	<0.24
	1505-2 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	54830255	54830255	54830255	54830255
90885	GREEN BAY	CONC	<0.25	<0.25	<0.25	<0.25
	1525-2 8/10/00	%REC	88.4			
	OVERFLOW	DUPL				
		OID	54830255	54830255	54830255	54830255
90886	GREEN BAY	CONC	<0.25	<0.25	<0.25	<0.25
	1625-2 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	54830255	54830255	54830255	54830255
90887	GREEN BAY	CONC	<0.26	<0.26	<0.26	<0.26
	1715-2 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	54830255	54830255	54830255	54830255
90888	GREEN BAY FEED	CONC	<0.23	<0.23	<0.23	<0.23
	1400-2 8/10/00	%REC				
		DUPL				
		OID	54830255	54830255	54830255	54830255
PCB-1016	PCB-1016					
PCB-1232	PCB-1232					
PCB-1248	PCB-1248					
		PCB-1221	PCB-1221			
		PCB-1242	PCB-1242			
		PCB-1254	PCB-1254			

JOB FILE: 90893

DATE: 26 SEP

## \*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG  
COMPLETION DATE: 26 SEP

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
PPB.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP # DESCRIPTION

SAMP #	DESCRIPTION	CONC	1	2	3	4	5	6	REMARKS
90889	GREEN BAY FEED 1505-2 8/10/00	CONC <0.24 %REC DUPL OID 54830255	<0.24	<0.24	<0.24	0.13 J	<0.24	<0.24	
90890	GREEN BAY FEED 1525-2 8/10/00	CONC <0.24 %REC DUPL OID 54830255	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	
90891	GREEN BAY FEED 1625-2 8/10/00	CONC <0.24 %REC DUPL OID 54830255	<0.26	<0.26	<0.26	0.21 J	<0.26	<0.26	
90892	GREEN BAY FEED 1715-2 8/10/00	CONC <0.24 %REC DUPL OID 54830255	<0.24	<0.24	<0.24	0.36	<0.24	<0.24	1
BL#01	METHOD BLANK 01	CONC <0.25 %REC DUPL OID 54830255	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	1
BL#02	LCS 01	CONC 2.37 %REC 94.8 DUPL OID 54830255	N/A	N/A	N/A	N/A	N/A	N/A	1

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE 90883

DATE: 26 SEP

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 21 AUG  
COMPLETION DATE: 26 SEP

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
PPB.....	PCB-1260	TOLXYL-S	DCLBP

SAMP # DESCRIPTION

90883	GREEN BAY 1400-2 8/10/00 OVERFLOW	CONC <0.25 %REC DUPL OID 54830255	59.8%   54830255	67.2%   54830255
90884	GREEN BAY 1505-2 8/10/00 OVERFLOW	CONC <0.24 %REC DUPL OID 54830255	45.6%   54830255	64.1%   54830255
90885	GREEN BAY 1525-2 8/10/00 OVERFLOW	CONC <0.25 %REC 78.8 DUPL OID 54830255	54.3% 61.9  54830255	66.6% 74.9  54830255
90886	GREEN BAY 1625-2 8/10/00 OVERFLOW	CONC <0.25 %REC DUPL OID 54830255	56.8%   54830255	63.6%   54830255
90887	GREEN BAY 1715-2 8/10/00 OVERFLOW	CONC <0.26 %REC DUPL OID 54830255	53.2%   54830255	61.2%   54830255
90888	GREEN BAY FEED 1400-2 8/10/00	CONC <0.23 %REC DUPL OID 54830255	56.8%   54830255	67.4%   54830255

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

TOLXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(60-150 WS



JOB FILE: 90883

DATE: 26 SEP

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 4 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG  
COMPLETION DATE: 26 SEP

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
PPB.....	PCB-1260	TcIXYL-S	DCLBP

SAMP # DESCRIPTION

90889	GREEN BAY FEED 1505-2 8/10/00	CONC <0.24 %REC DUPL OID 54830255	29.8%       54830255	58.5%       54830255	     
90890	GREEN BAY FEED 1525-2 8/10/00	CONC <0.24 %REC DUPL OID 54830255	38.5%       54830255	72.5%       54830255	     
90891	GREEN BAY FEED 1625-2 8/10/00	CONC <0.26 %REC DUPL OID 54830255	35.1%       54830255	64.6%       54830255	     
90892	GREEN BAY FEED 1715-2 8/10/00	CONC <0.24 %REC DUPL OID 54830255	35.6%       54830255	64.3%       54830255	     
BL#01	METHOD BLANK 01	CONC <0.25 %REC DUPL OID 54830255	64.1%       54830255	81.7%       54830255	     
BL#02	LCS 01	CONC 2.32 %REC 92.8 DUPL OID 54830255	70.8%       54830255	74.6%       54830255	     

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

TcIXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(60-150 WS)

## INTERNAL QC DATA

Jobfile Number: 90883  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 21 AUG 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	QID
90883	90885	137	PCB-1016	88.4	82.8	6.5	54830255
90883	90885	143	PCB-1260	78.8	74.8	5.2	54830255
90883	90885	145	TclXYL-S	61.9	68.2	9.7	54830255
90883	90885	146	DCLBP	74.9	68.6	8.8	54830255

Job Description: GREEN BAY - OLIN-ESTES

Job File Number: 90883

### ECB Quality Assurance Corrective Action Form

Analysis: PCB

Date: 26-September-00

Analyst: A. MORROW

Instrument: \_\_\_\_\_

Problem: Instrument integrated incorrectly because of low responses or concentrations.

Sample Number(s) Affected: 90883-90892

Recommended Corrective Action: Re-integrate manually

Corrective Action Taken By Analyst: Same as above.

Comments: Re-integrated manually and reported values. If there are questions, please call.

Date Corrective Action Taken: 26-September-00

Reviewed by: [Signature]

22-February 95

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JOB FILE: 90893

DATE: 13 MAR 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG 0  
COMPLETION DATE: 13 MAR 0

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
PPH.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

R

90893	GREEN BAY	CONC	0.005	<0.0002	0.006	0.003	<0.001	<0.00020
	SUPPLY WATER	%REC	126.0	93.2	90.6	80.2	97.2	94.0
	8/10/00 0930	DUPL	0.005	<0.0002	0.005	0.003	<0.001	<0.00020
		OID	01260271	01260271	01260271	01260271	01260271	04650255
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
90894	GREEN BAY FEED	CONC	0.004	<0.0002	0.004	0.003	<0.001	<0.00020
	1400-1 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01260271	04650255
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
90895	GREEN BAY FEED	CONC	0.004	<0.0002	0.005	0.003	<0.001	<0.00020
	1400-2 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01260271	04650255
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
90896	GREEN BAY FEED	CONC	0.004	<0.0002	0.005	0.002	<0.001	<0.00020
	1505-1 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01260271	04650255
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
90897	GREEN BAY FEED	CONC	0.003	<0.0002	0.005	0.002	<0.001	<0.00020
	1505-2 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01260271	04650255
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
90898	GREEN BAY FEED	CONC	0.004	<0.0002	0.005	0.002	<0.001	<0.00020
	1525-2 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01260271	04650255
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		

AS Arsenic  
CR Chromium  
PB LeadCD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 90893

DATE: 13 MAR 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG 0  
COMPLETION DATE: 13 MAR 0

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
PPM.....	AS	CD	CR	CU	PB	HG

SAMP #	DESCRIPTION						RC
90899	GREEN BAY FEED 1525-2 8/10/00	CONC 0.004 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	0.005     01260271 HGA AUTH	0.003     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 
90900	GREEN BAY FEED 1625-1 8/10/00	CONC 0.004 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	0.004     01260271 HGA AUTH	0.002     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 
90901	GREEN BAY FEED 1625-2 8/10/00	CONC 0.004 %REC 126.2 DUPL 0.004 OID 01260271	<0.0002   93.0   01260271 HGA AUTH	0.004   92.6   0.004 01260271 HGA AUTH	0.003   84.4   0.003 01260271 HGA AUTH	<0.001   96.2   <0.001 01260271 HGA AUTH	<0.00020   88.0   <0.00020 04650255 
90902	GREEN BAY FEED 1715-1 8/10/00	CONC 0.004 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	0.004     01260271 HGA AUTH	0.002     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 
90903	GREEN BAY FEED 1715-2 8/10/00	CONC 0.004 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	0.005     01260271 HGA AUTH	0.003     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 
90904	GREEN BAY 1400-1 8/10/00 OVERFLOW	CONC 0.004 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	0.005     01260271 HGA AUTH	0.002     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 

AS Arsenic  
CR Chromium  
PB LeadCD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 90893

DATE: 13 MAR

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG  
COMPLETION DATE: 13 MAR

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
PPM.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

SAMP #	DESCRIPTION	CONC	0.004	<0.0002	0.005	0.002	<0.001	<0.00020
90905	GREEN BAY 1400-2 8/10/00 OVERFLOW	%REC						
		DUPL						
		OID	01260271	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	04650255
90906	GREEN BAY 1505-1 8/10/00 OVERFLOW	%REC						
		DUPL						
		OID	01260271	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	04650255
90907	GREEN BAY 1505-2 8/10/00 OVERFLOW	%REC						
		DUPL						
		OID	01260271	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	04650255
90908	GREEN BAY 1525-1 8/10/00 OVERFLOW	%REC						
		DUPL						
		OID	01260271	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	04650255
90909	GREEN BAY 1525-2 8/10/00 OVERFLOW	%REC	126.6	93.2	95.4	86.6	91.8	90.0
		DUPL	0.003	<0.0002	0.005	0.002	<0.001	<0.00020
		OID	01260271	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	04650255
90910	GREEN BAY 1625-1 8/10/00 OVERFLOW	%REC						
		DUPL						
		OID	01260271	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	01260271 HGA AUTH	04650255

AS Arsenic  
CR Chromium  
PB LeadCD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 90893

DATE: 13 MAR 1991

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - CLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG 1990  
COMPLETION DATE: 13 MAR 1991

COLUMN.....	1	2	3	4	5	6	
ANALYTE.....	2	4	5	6	7	8	
PPM.....	AS	CD	CR	CU	PB	HG	
SAMP #	DESCRIPTION						R
90911	GREEN BAY 1625-2 8/10/00 OVERFLOW	CONC 0.005 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	0.007     01260271 HGA AUTH	0.002     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 
90912	GREEN BAY 1715-1 8/10/00 OVERFLOW	CONC 0.004 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	0.006     01260271 HGA AUTH	0.002     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 
90913	GREEN BAY 1715-2 8/10/00 OVERFLOW	CONC 0.004 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	0.005     01260271 HGA AUTH	0.002     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 
BL#01	METHOD BLANK 01	CONC <0.002 %REC DUPL OID 01260271	<0.0002     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.001     01260271 HGA AUTH	<0.00020     04650255 
BL#02	LCS 01	CONC 0.050 %REC 100.0 DUPL OID 01260271	0.0518   103.6   01260271 HGA AUTH	0.052   103.2   01260271 HGA AUTH	0.048   96.4   01260271 HGA AUTH	0.050   100.6   01260271 HGA AUTH	0.000765   102.0   04650255 
BL#03	EXTERNAL QC 01	CONC 0.428 %REC 110.3 DUPL OID 01260271	0.174   104.2   01260271 HGA AUTH	0.522   105.9   01260271 HGA AUTH	0.086   99.5   01260271 HGA AUTH	0.619   102.3   01260271 HGA AUTH	0.000624   104.5   04650255 

AS Arsenic  
CR Chromium  
PB LeadCD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 90893

DATE: 13 MAR 01

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG 01  
COMPLETION DATE: 13 MAR 01

		COLUMN.....	7	8	9	10	11	12
		ANALYTE.....	9	10	11	13	25	30
		PPM.....	NI	SE	AG	ZN	BA	FE
SAMP #	DESCRIPTION							
90893	GREEN BAY	CONC	0.014	0.002	<0.001	0.046	0.108	0.080
	SUPPLY WATER	%REC	83.6	131.0	81.8	83.0	94.4	8.8
	8/10/00 0930	DUPL	0.014	0.002	<0.001	0.045	0.107	0.077
		OID	01260271	01260271	01260271	01260271	01260271	01260271
			HGA AUTH		HGA AUTH			
90894	GREEN BAY FEED	CONC	0.009	0.002	<0.001	0.095	0.302	0.047
	1400-1 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01230269	01260271
			HGA AUTH		HGA AUTH			
90895	GREEN BAY FEED	CONC	0.010	0.002	<0.001	0.071	0.264	0.083
	1400-2 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01230269	01260271
			HGA AUTH		HGA AUTH			
90896	GREEN BAY FEED	CONC	0.009	0.002	<0.001	0.042	0.183	0.073
	1505-1 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01230269	01260271
			HGA AUTH		HGA AUTH			
90897	GREEN BAY FEED	CONC	0.010	0.002	<0.001	0.050	0.205	0.407
	1505-2 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01230269	01260271
			HGA AUTH		HGA AUTH			
90898	GREEN BAY FEED	CONC	0.010	0.002	<0.001	0.045	0.194	0.055
	1525-2 8/10/00	%REC						
		DUPL						
		OID	01260271	01260271	01260271	01260271	01230269	01260271
			HGA AUTH		HGA AUTH			
NI	Nickel				SE	Selenium		
AG	Silver				ZN	Zinc		
BA	Barium				FE	Iron		



JOB FILE: 90893

DATE: 13 MAR 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG 1  
COMPLETION DATE: 13 MAR 1

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
PPM.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

R

90899	GREEN BAY FEED 1525-2 8/10/00	CONC 0.010 %REC DUPL OID 01260271 HGA AUTH	0.002     01260271	<0.001     01260271 HGA AUTH	0.038     01260271	0.168     01230269	0.425     01260271
90900	GREEN BAY FEED 1625-1 8/10/00	CONC 0.009 %REC DUPL OID 01260271 HGA AUTH	0.002     01260271	<0.001     01260271 HGA AUTH	0.022     01260271	0.127     01230269	0.021     01260271
90901	GREEN BAY FEED 1625-2 8/10/00	CONC 0.009 %REC 86.4 DUPL 0.009 OID 01260271 HGA AUTH	0.002   131.4 0.002 01260271	<0.001   84.6 <0.001 01260271 HGA AUTH	0.019   82.4 0.018 01260271	0.111   96.8 0.110 01230269	<0.020   116.0 <0.0020 01260271
90902	GREEN BAY FEED 1715-1 8/10/00	CONC 0.010 %REC DUPL OID 01260271 HGA AUTH	0.002     01260271	<0.001     01260271 HGA AUTH	0.024     01260271	0.141     01230269	0.032     01260271
90903	GREEN BAY FEED 1715-2 8/10/00	CONC 0.010 %REC DUPL OID 01260271 HGA AUTH	0.002     01260271	<0.001     01260271 HGA AUTH	0.022     01260271	0.133     01230269	0.033     01260271
90904	GREEN BAY 1400-1 8/10/00 OVERFLOW	CONC 0.009 %REC DUPL OID 01260271 HGA AUTH	0.002     01260271	<0.001     01260271 HGA AUTH	0.062     01260271	0.246     01230269	0.111     01260271

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 90893

DATE: 13 MAR

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 7 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG  
COMPLETION DATE: 13 MAR

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
PPM.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

R

90905	GREEN BAY 1400-2 8/10/00 OVERFLOW	CONC %REC DUPL OID HGA AUTH	0.008   01260271 01260271	0.002   01260271 01260271	<0.001   01260271 HGA AUTH	0.077   01260271 01260271	0.263   01230269 01260271	0.053   01260271 01260271
90906	GREEN BAY 1505-1 8/10/00 OVERFLOW	CONC %REC DUPL OID HGA AUTH	0.009   01260271 01260271	0.002   01260271 01260271	<0.001   01260271 HGA AUTH	0.041   01260271 01260271	0.180   01230269 01260271	0.024   01260271 01260271
90907	GREEN BAY 1505-2 8/10/00 OVERFLOW	CONC %REC DUPL OID HGA AUTH	0.009   01260271 01260271	0.002   01260271 01260271	<0.001   01260271 HGA AUTH	0.046   01260271 01260271	0.197   01230269 01260271	0.153   01260271 01260271
90908	GREEN BAY 1525-1 8/10/00 OVERFLOW	CONC %REC DUPL OID HGA AUTH	0.010   01260271 01260271	0.002   01260271 01260271	<0.001   01260271 HGA AUTH	0.047   01260271 01260271	0.186   01230269 01260271	0.034   01260271 01260271
90909	GREEN BAY 1525-2 8/10/00 OVERFLOW	CONC %REC DUPL OID HGA AUTH	0.009 88.8 0.009 01260271 HGA AUTH	0.002 129.2 0.002 01260271 01260271	<0.001 8.2 <0.001 01260271 HGA AUTH	0.042 81.2 0.043 01260271 01260271	0.193 96.4 0.193 01230269 01260271	0.130 98.8 0.135 01260271 01260271
90910	GREEN BAY 1625-1 8/10/00 OVERFLOW	CONC %REC DUPL OID HGA AUTH	0.010   01260271 01260271	0.002   01260271 01260271	<0.001   01260271 HGA AUTH	0.021   01260271 01260271	0.121   01230269 01260271	0.033   01260271 01260271

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 90893

DATE: 13 MAR 01

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 8 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG 01  
COMPLETION DATE: 13 MAR 01

COLUMN.....	7	8	9	10	11	12	
ANALYTE.....	9	10	11	13	25	30	
PPM.....	NI	SE	AG	ZN	BA	FE	
SAMP # DESCRIPTION							RE
90911 GREEN BAY CONC 0.010	0.002	<0.001	0.019	0.123	0.025		
1625-2 8/10/00 %REC							
OVERFLOW DUPL							
OID 01260271	01260271	01260271	01260271	01230269	01260271		
HGA AUTH		HGA AUTH					
90912 GREEN BAY CONC 0.010	0.002	<0.001	0.022	0.134	<0.020		
1715-1 8/10/00 %REC							
OVERFLOW DUPL							
OID 01260271	01260271	01260271	01260271	01230269	01260271		
HGA AUTH		HGA AUTH					
90913 GREEN BAY CONC 0.009	0.002	<0.001	0.019	0.126	<0.020		
1715-2 8/10/00 %REC							
OVERFLOW DUPL							
OID 01260271	01260271	01260271	01260271	01230269	01260271		
HGA AUTH		HGA AUTH					
BL#01 METHOD BLANK 01 CONC <0.001	<0.002	<0.001	<0.010	<0.001	<0.020		
%REC							
DUPL							
OID 01260271	01260271	01260271	01260271	01230269	01260271		
HGA AUTH		HGA AUTH					
BL#02 LCS 01 CONC 0.050	0.051	0.050	0.050	0.048	1.94		
%REC 100.0	101.0	100.6	99.2	95.8	97.0		
DUPL							
OID 01260271	01260271	01260271	01260271	01230269	01260271		
HGA AUTH		HGA AUTH					
BL#03 EXTERNAL QC 01 CONC 2.54	1.53	0.526	1.27	0.766	1.27		
%REC 102.0	103.4	102.5	94.8	96.8	102.4		
DUPL							
OID 01260271	01260271	01260271	01260271	01230269	01260271		
HGA AUTH		HGA AUTH					
NI Nickel		SE Selenium					
AG Silver		ZN Zinc					
BA Barium		FE Iron					

JOB FILE: 90893

DATE: 13 MAR (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 9 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 21 AUG (

COMPLETION DATE: 13 MAR (

COLUMN.....	13	14	15
ANALYTE.....	31	32	33
PPH.....	MG	MN	MO

SAMP # DESCRIPTION

90893	GREEN BAY	CONC	75.6	3.03	<0.001	
	SUPPLY WATER	%REC	94.8	96.2	106.0	
	8/10/00 0930	DUPL	76.1	3.05	<0.001	
		OID	01230269	01230269	01260271	
90894	GREEN BAY FEED	CONC	77.1	1.40	0.005	
	1400-1 8/10/00	%REC				
		DUPL				
		OID	01230269	01230269	01260271	
90895	GREEN BAY FEED	CONC	74.9	1.40	0.005	
	1400-2 8/10/00	%REC				
		DUPL				
		OID	01230269	01230269	01260271	
90896	GREEN BAY FEED	CONC	77.1	1.83	0.003	
	1505-1 8/10/00	%REC				
		DUPL				
		OID	01230269	01230269	01260271	
90897	GREEN BAY FEED	CONC	76.0	1.89	0.003	
	1505-2 8/10/00	%REC				
		DUPL				
		OID	01230269	01230269	01260271	
90898	GREEN BAY FEED	CONC	76.2	1.84	0.002	
	1525-2 8/10/00	%REC				
		DUPL				
		OID	01230269	01230269	01260271	

MG Magnesium  
MO Molybdenum

MN Manganese

JOB FILE: 90893

DATE: 13 MAR 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 10 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 21 AUG ( )  
COMPLETION DATE: 13 MAR ( )

COLUMN.....	13	14	15
ANALYTE.....	31	32	33
PPM.....	MG	MN	MO

SAMP # DESCRIPTION

R.

90899	GREEN BAY FEED 1525-2 8/10/00	CONC 77.9 %REC DUPL OID 01230269	1.97       01230269	0.002       01260271	     
90900	GREEN BAY FEED 1625-1 8/10/00	CONC 77.3 %REC DUPL OID 01230269	1.59       01230269	0.003       01260271	     
90901	GREEN BAY FEED 1625-2 8/10/00	CONC 77.3 %REC 94.4 DUPL 76.9 OID 01230269	1.30   96.2   1.29   01230269	0.003   108.0   0.003   01260271	     
90902	GREEN BAY FEED 1715-1 8/10/00	CONC 76.7 %REC DUPL OID 01230269	1.41       01230269	0.002       01260271	     
90903	GREEN BAY FEED 1715-2 8/10/00	CONC 78.0 %REC DUPL OID 01230269	1.46       01230269	0.002       01260271	     
90904	GREEN BAY 1400-1 8/10/00 OVERFLOW	CONC 78.6 %REC DUPL OID 01230269	1.72       01230269	0.005       01260271	     

MG Magnesium  
MO Molybdenum

MN Manganese

JOB FILE: 90893

DATE: 13 MAR

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 11 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATERRECEIPT DATE: 21 AUG  
COMPLETION DATE: 13 MAR

COLUMN.....	13	14	15
ANALYTE.....	31	32	33
PPM.....	MG	MN	MO

SAMP # DESCRIPTION

R

90905	GREEN BAY	CONC	78.1	1.60	0.006
	1400-2 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	01230269	01230269	01260271
90906	GREEN BAY	CONC	78.8	1.31	0.003
	1505-1 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	01230269	01230269	01260271
90907	GREEN BAY	CONC	78.9	1.81	0.003
	1505-2 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	01230269	01230269	01260271
90908	GREEN BAY	CONC	78.9	1.76	0.002
	1525-1 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	01230269	01230269	01260271
90909	GREEN BAY	CONC	78.9	1.83	0.002
	1525-2 8/10/00	%REC	92.4	95.8	110.0
	OVERFLOW	DUPL	79.2	1.84	0.002
		OID	01230269	01230269	01260271
90910	GREEN BAY	CONC	77.5	1.59	0.003
	1625-1 8/10/00	%REC			
	OVERFLOW	DUPL			
		OID	01230269	01230269	01260271

MG Magnesium  
MO Molybdenum

MN Manganese

JOB FILE: 90893

DATE: 13 MAR 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 12 OF 12 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE: HNO3

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 21 AUG 1  
COMPLETION DATE: 13 MAR 1

COLUMN.....	13	14	15
ANALYTE.....	31	32	33
PPM.....	HG	MN	MO

SAMP # DESCRIPTION

R1

90911	GREEN BAY	CONC	77.6		1.63		0.003	
	1625-2 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01230269		01230269		01260271	

90912	GREEN BAY	CONC	76.7		1.31		0.003	
	1715-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01230269		01230269		01260271	

90913	GREEN BAY	CONC	77.9		1.38		0.003	
	1715-2 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01230269		01230269		01260271	

6/11

BL#01	METHOD BLANK 01	CONC	<0.100		<0.001		<0.001	
		%REC						
		DUPL						
		OID	01230269		01230269		01260271	

BL#02	LCS 01	CONC	4.70		0.480		0.051	
		%REC	94.0		96.0		102.2	
		DUPL						
		OID	01230269		01230269		01260271	

BL#03	EXTERNAL QC 01	CONC	34.6		0.566		0.568	
		%REC	98.3		99.1		103.6	
		DUPL						
		OID	01230269		01230269		01260271	

HG Magnesium  
MO Molybdenum

MN Manganese

JOB FILE: 90914

DATE: 03 OCT 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET (PAGE 05 OF 6) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 21 AUG 0  
COMPLETION DATE: 3 OCT 0

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP # DESCRIPTION

RC

90914	GREEN BAY 1400-1 8/10/00 OVERFLOW	CONC <18.0 %REC 99.6 DUPL O1D 54830255	<18.0 54830255	<18.0 54830255	3824 ✓ 54830255	<18.0 54830255	<18.0 54830255
90915	GREEN BAY 1505-1 8/10/00 OVERFLOW	CONC <20.3 %REC DUPL O1D 54830255	<20.3 54830255	<20.3 54830255	4376 54830255	<20.3 54830255	<20.3 54830255
90916	GREEN BAY 1525-1 8/10/00 OVERFLOW	CONC <18.0 %REC DUPL O1D 54830255	<18.0 54830255	<18.0 54830255	3859 54830255	<18.0 54830255	<18.0 54830255
90917	GREEN BAY 1625-1 8/10/00 OVERFLOW	CONC <22.9 %REC DUPL O1D 54830255	<22.9 54830255	<22.9 54830255	4719 ✓ 54830255	<22.9 54830255	<22.9 54830255
90918	GREEN BAY 1715-1 8/10/00 OVERFLOW	CONC <20.6 %REC DUPL O1D 54830255	<20.6 54830255	<20.6 54830255	4482 ✓ 54830255	<20.6 54830255	<20.6 54830255
90919	GREEN BAY 1400-2 8/10/00 OVERFLOW	CONC <19.0 %REC DUPL O1D 54830255	<19.0 54830255	<19.0 54830255	3823 ✓ 54830255	<19.0 54830255	<19.0 54830255

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254*not official*



JOB FILE: 90914

DATE: 03 OCT (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG (

COMPLETION DATE: 3 OCT (

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP # DESCRIPTION

R:

90920	GREEN BAY 1505-2 8/10/00 OVERFLOW	CONC %REC DUPL OID	<20.4     54830255	<20.4     54830255	<20.4     54830255	4659 /     54830255	<20.4     54830255	<20.4     54830255
90921	GREEN BAY 1525-2 8/10/00 OVERFLOW	CONC %REC DUPL OID	<16.7     54830255	<16.7     54830255	<16.7     54830255	3256 /     54830255	<16.7     54830255	<16.7     54830255
90922	GREEN BAY 1625-2 8/10/00 OVERFLOW	CONC %REC DUPL OID	<21.5     54830255	<21.5     54830255	<21.5     54830255	4243 /     54830255	<21.5     54830255	<21.5     54830255
90923	GREEN BAY 1715-2 8/10/00 OVERFLOW	CONC %REC DUPL OID	<16.1     54830255	<16.1     54830255	<16.1     54830255	3138 /     54830255	<16.1     54830255	<16.1     54830255
90924	GREEN BAY FEED 1400-1 8/10/00	CONC %REC DUPL OID	<18.4     54830255	<18.4     54830255	<18.4     54830255	3446     54830255	<18.4     54830255	<18.4     54830255
90925	GREEN BAY FEED 1505-2 8/10/00	CONC %REC DUPL OID	<15.5     54830255	<15.5     54830255	<15.5     54830255	2933     54830255	<15.5     54830255	<15.5     54830255

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE: 90914

DATE: 03 OCT 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 21 AUG 0  
COMPLETION DATE: 3 OCT 0

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254
SAMP # DESCRIPTION						
90926 GREEN BAY FEED 1525-2 8/10/00	CONC <15.9 %REC DUPL OID 54830255	<15.9   54830255	<15.9   54830255	3216   54830255	<15.9   54830255	<15.9   54830255
90927 GREEN BAY FEED 1625-2 8/10/00	CONC <16.1 %REC DUPL OID 54830255	<16.1   54830255	<16.1   54830255	2896   54830255	<16.1   54830255	<16.1   54830255
90928 GREEN BAY FEED 1715-2 8/10/00	CONC <15.8 %REC DUPL OID 54830255	<15.8   54830255	<15.8   54830255	2869   54830255	<15.8   54830255	<15.8   54830255
BL#01 METHOD BLANK 01	CONC <6.25 %REC DUPL OID 54830255	<6.25   54830255	<6.25   54830255	<6.25   54830255	<6.25   54830255	<6.25   54830255
BL#02 LCS 01	CONC 0.62 %REC 98.8 DUPL OID 54830255	N/A   54830255	N/A   54830255	N/A   54830255	N/A   54830255	N/A   54830255
PCB-1016 PCB-1016 PCB-1232 PCB-1232 PCB-1248 PCB-1248		PCB-1221 PCB-1221 PCB-1242 PCB-1242 PCB-1254 PCB-1254				

JOB FILE: 90914

DATE: 03 OCT 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG  
COMPLETION DATE: 3 OCT

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	TcIXYL-S	DCLBP

SAMP # DESCRIPTION

R

90914	GREEN BAY	CONC	123		107%		185%	
	1400-1 8/10/00	%REC	109.2		126		149	
	OVERFLOW	DUPL						
		OID	54830255		54830255		54830255	
90915	GREEN BAY	CONC	119		93.0%		150%	
	1505-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	54830255		54830255		54830255	
90916	GREEN BAY	CONC	113		106%		130%	
	1525-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	54830255		54830255		54830255	
90917	GREEN BAY	CONC	64.1		106%		112%	
	1625-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	54830255		54830255		54830255	
90918	GREEN BAY	CONC	106		98.3%		116%	
	1715-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	54830255		54830255		54830255	
90919	GREEN BAY	CONC	92.9		111%		126%	
	1400-2 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	54830255		54830255		54830255	

PCB-1260 PCB-1260  
DCLBP Decachlorobiphenyl(Surrogate (60-150 WS))

TcIXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

JOB FILE: 90914

DATE: 03 OCT 01

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG 01  
COMPLETION DATE: 3 OCT 01

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	TcIXYL-S	DCLBP

SAMP # DESCRIPTION

90920	GREEN BAY 1505-2 8/10/00 OVERFLOW	CONC 113 %REC DUPL OID 54830255	112%   54830255	121%   54830255
90921	GREEN BAY 1525-2 8/10/00 OVERFLOW	CONC 158 %REC DUPL OID 54830255	106%   54830255	125%   54830255
90922	GREEN BAY 1625-2 8/10/00 OVERFLOW	CONC 103 %REC DUPL OID 54830255	110%   54830255	122%   54830255
90923	GREEN BAY 1715-2 8/10/00 OVERFLOW	CONC 107 %REC DUPL OID 54830255	107%   54830255	139%   54830255
90924	GREEN BAY FEED 1400-1 8/10/00	CONC 90.6 %REC DUPL OID 54830255	105%   54830255	122%   54830255
90925	GREEN BAY FEED 1505-2 8/10/00	CONC 116 %REC DUPL OID 54830255	102%   54830255	104%   54830255

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (60-150 WS))

TcIXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS))

JOB FILE: .90914

DATE: 03 OCT (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG (

COMPLETION DATE: 3 OCT (

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	TcIXYL-S	DCLBP

SAMP # DESCRIPTION

R:

90926	GREEN BAY FEED 1525-2 8/10/00	CONC 113 %REC DUPL OID 54830255	116%       54830255	120%       54830255	     
90927	GREEN BAY FEED 1625-2 8/10/00	CONC 138 %REC DUPL OID 54830255	110%       54830255	120%       54830255	     
90928	GREEN BAY FEED 1715-2 8/10/00	CONC 103 %REC DUPL OID 54830255	109%       54830255	97.8%       54830255	     
BL#01	METHOD BLANK 01	CONC <6.25 %REC DUPL OID 54830255	86.3%       54830255	74.2%       54830255	     
BL#02	LCS 01	CONC 0.61 %REC 97.2 DUPL OID 54830255	87.2%       54830255	72.3%       54830255	     

PCB-1260 PCB-1260  
DCLBP Decachlorobiphenyl(Surrogate (60-150 WS))

TcIXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

## INTERNAL QC DATA

Jobfile Number: 90914  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 21 AUG 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
90914	90914	137	PCB-1016	99.6	44.8	75.9	54830255
90914	90914	143	PCB-1260	109.2	115.6	5.7	54830255
90914	90914	145	TclXYL-S	126	119	5.7	54830255
90914	90914	146	DCLBP	149	154	3.3	54830255

JOB FILE: 90929

DATE: 14 MAR (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG (

COMPLETION DATE: 14 MAR (

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
HG/KG.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

R

90929	GREEN BAY 1400-1 8/10/00 OVERFLOW	CONC 3.30 %REC 93.8 DUPL 3.20 OID 01260270	0.820 95.6 0.800 01260270 HGA AUTH	42.3 98.6 41.6 01260270 HGA AUTH	50.9 89.0 50.3 01260270 HGA AUTH	57.0 102.4 56.1 01260270 HGA AUTH	1.20 96.0 1.18 04650263
90930	GREEN BAY 1505-1 8/10/00 OVERFLOW	CONC 3.89 %REC DUPL OID 01260270	0.869   01260270 HGA AUTH	53.7   01260270 HGA AUTH	56.0   01260270 HGA AUTH	64.0   01260270 HGA AUTH	1.51   04650263
90931	GREEN BAY 1525-1 8/10/00 OVERFLOW	CONC 2.69 %REC DUPL OID 01260270	0.648   01260270 HGA AUTH	37.5   01260270 HGA AUTH	49.7   01260270 HGA AUTH	48.6   01260270 HGA AUTH	1.22   04650263
90932	GREEN BAY 1625-1 8/10/00 OVERFLOW	CONC 3.70 %REC DUPL OID 01260270	0.960   01260270 HGA AUTH	57.6   01260270 HGA AUTH	52.5   01260270 HGA AUTH	69.2   01260270 HGA AUTH	1.44   04650263
90933	GREEN BAY 1715-1 8/10/00 OVERFLOW	CONC 3.50 %REC DUPL OID 01260270	0.840   01260270 HGA AUTH	52.9   01260270 HGA AUTH	50.5   01260270 HGA AUTH	61.4   01260270 HGA AUTH	1.21   04650263
90934	GREEN BAY 1400-2 8/10/00 OVERFLOW	CONC 4.00 %REC DUPL OID 01260270	0.840   01260270 HGA AUTH	49.5   01260270 HGA AUTH	53.4   01260270 HGA AUTH	61.4   01260270 HGA AUTH	1.36   04650263

AS Arsenic  
CR Chromium  
PB Lead

CD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 90929

DATE: 14 MAR 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 21 AUG 1  
COMPLETION DATE: 14 MAR 1

		COLUMN.....	1	2	3	4	5	6
		ANALYTE.....	2	4	5	6	7	8
		MG/KG.....	AS	CD	CR	CU	PB	HG
SAMP #	DESCRIPTION							
90935	GREEN BAY	CONC	3.50	0.879	48.2	53.7	64.6	1.52
	1505-2 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	04650263
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90936	GREEN BAY	CONC	3.09	0.727	42.8	42.6	54.3	1.30
	1525-2 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	04650263
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90937	GREEN BAY	CONC	3.89	0.937	59.3	52.4	67.0	1.31
	1625-2 8/10/00	%REC	90.8	93.8	92.8	83.6	96.0	102.7
	OVERFLOW	DUPL	3.89	0.937	59.0	52.5	67.8	1.33
		OID	01260270	01260270	01260270	01260270	01260270	04650263
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90938	GREEN BAY	CONC	2.89	0.688	43.7	38.3	48.4	0.870
	1715-2 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	04650263
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90939	GREEN BAY FEED	CONC	3.29	0.738	44.3	46.5	50.8	1.11
	1400-2 8/10/00	%REC						
		DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	04650263
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
90940	GREEN BAY FEED	CONC	2.70	0.580	37.7	38.2	41.6	1.00
	1505-2 8/10/00	%REC						
		DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	04650263
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
AS	Arsenic			CD	Cadmium			
CR	Chromium			CU	Copper			
PB	Lead			HG	Mercury			



JOB FILE: 90929

DATE: 14 MAR

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 21 AUG  
COMPLETION DATE: 14 MAR

COLUMN.....	1	2	3	4	5	6	
ANALYTE.....	2	4	5	6	7	8	
MG/KG.....	AS	CD	CR	CU	PB	HG	
SAMP #	DESCRIPTION					R	
90941	GREEN BAY FEED	CONC 2.30	0.560	31.7	34.6	40.6	0.880
	1525-2 8/10/00	%REC					
		DUPL					
	OID 01260270	01260270	01260270	01260270	01260270	04650263	
		HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
90942	GREEN BAY FEED	CONC 2.39	0.599	36.9	33.7	46.4	0.836
	1625-2 8/10/00	%REC					
		DUPL					
	OID 01260270	01260270	01260270	01260270	01260270	04650263	
		HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
90943	GREEN BAY FEED	CONC 2.50	0.509	36.0	31.4	39.7	0.640
	1715-2 8/10/00	%REC					
		DUPL					
	OID 01260270	01260270	01260270	01260270	01260270	04650263	
		HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
BL#01	METHOD BLANK 01	CONC <0.200	<0.020	<0.100	<0.100	<0.100	<0.040
		%REC					
		DUPL					
	OID 01260270	01260270	01260270	01260270	01260270	04650263	
		HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
BL#02	LCS 01	CONC 9.18	4.80	21.5	19.7	10.9	0.068
		%REC 91.8	96.0	107.5	98.5	109.0	90.7
		DUPL					
	OID 01260270	01260270	01260270	01260270	01260270	04650263	
		HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
BL#03	EXTERNAL QC 01	CONC 81.5	36.7	19.3	94.8	1170	0.055
		%REC					91.7
		DUPL					
	OID 01260270	01260270	01260270	01260270	01260270	04650263	
		HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH		
AS	Arsenic		CD	Cadmium			
CR	Chromium		CU	Copper			
PB	Lead		HG	Mercury			

JOB FILE: 90929

DATE: 14 MAR 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 21 AUG 1  
COMPLETION DATE: 14 MAR 1

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

Rt

90929	GREEN BAY	CONC	18.7	0.600	0.400	115	76.1	16800
	1400-1 8/10/00	%REC	94.4	84.4	96.8	94.0	101.6	114.0
	OVERFLOW	DUPL	18.3	0.600	0.400	115	75.6	16900
		OID	01260270	01260270	01260270	01260270	01260270	01230271
			HGA AUTH		HGA AUTH			
90930	GREEN BAY	CONC	21.3	0.799	0.699	125	90.0	21100
	1505-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	01230271
			HGA AUTH		HGA AUTH			
90931	GREEN BAY	CONC	15.5	0.498	0.399	94.6	60.7	14700
	1525-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	01230271
			HGA AUTH		HGA AUTH			
90932	GREEN BAY	CONC	19.9	0.700	0.500	132	88.6	18200
	1625-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	01230271
			HGA AUTH		HGA AUTH			
90933	GREEN BAY	CONC	20.3	0.600	0.500	125	84.0	18900
	1715-1 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	01230271
			HGA AUTH		HGA AUTH			
90934	GREEN BAY	CONC	20.7	0.800	0.500	124	85.9	20400
	1400-2 8/10/00	%REC						
	OVERFLOW	DUPL						
		OID	01260270	01260270	01260270	01260270	01260270	01230271
			HGA AUTH		HGA AUTH			

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 90929

DATE: 14 MAR 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 21 AUG 1  
COMPLETION DATE: 14 MAR 1

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP #	DESCRIPTION							R
90935	GREEN BAY 1505-2 8/10/00 OVERFLOW	CONC 19.9 %REC DUPL OID 01260270 HGA AUTH	0.699     01260270	0.500     01260270 HGA AUTH	122     01260270	80.2     01260270	17100     01230271	
90936	GREEN BAY 1525-2 8/10/00 OVERFLOW	CONC 17.1 %REC DUPL OID 01260270 HGA AUTH	0.498     01260270	0.498     01260270 HGA AUTH	103     01260270	71.0     01260270	17300     01230271	
90937	GREEN BAY 1625-2 8/10/00 OVERFLOW	CONC 20.4 %REC 90.8 DUPL 20.5 OID 01260270 HGA AUTH	0.797 83.0 0.797 01260270	0.598 95.4 0.598 01260270 HGA AUTH	134 94.0 130 01260270	90.0 91.6 89.5 01260270	19800 70.0 19200 01230271	
90938	GREEN BAY 1715-2 8/10/00 OVERFLOW	CONC 16.0 %REC DUPL OID 01260270 HGA AUTH	0.498     01260270	0.698     01260270 HGA AUTH	94.8     01260270	67.0     01260270	15800     01230271	
90939	GREEN BAY FEED 1400-2 8/10/00	CONC 18.6 %REC DUPL OID 01260270 HGA AUTH	0.599     01260270	0.499     01260270 HGA AUTH	107     01260270	77.4     01260270	19300     01230271	
90940	GREEN BAY FEED 1505-2 8/10/00	CONC 15.2 %REC DUPL OID 01260270 HGA AUTH	0.600     01260270	0.400     01260270 HGA AUTH	80.5     01260270	61.9     01260270	15100     01230271	

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 90929

DATE: 14 MAR

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 21 AUG  
COMPLETION DATE: 14 MAR

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP #	DESCRIPTION						R
90941	GREEN BAY FEED 1525-2 8/10/00	CONC 13.9 %REC DUPL OID 01260270 HGA AUTH	0.400   01260270	0.300   01260270 HGA AUTH	77.8   01260270	50.6   01260270	12600   01230271
90942	GREEN BAY FEED 1625-2 8/10/00	CONC 13.6 %REC DUPL OID 01260270 HGA AUTH	0.399   01260270	0.399   01260270 HGA AUTH	84.5   01260270	57.1   01260270	12500   01230271
90943	GREEN BAY FEED 1715-2 8/10/00	CONC 13.7 %REC DUPL OID 01260270 HGA AUTH	0.400   01260270	0.300   01260270 HGA AUTH	76.3   01260270	56.0   01260270	13500   01230271
BL#01	METHOD BLANK 01	CONC <0.100 %REC DUPL OID 01260270 HGA AUTH	<0.200   01260270	<0.100   01260270 HGA AUTH	<1.00   01260270	<0.100   01260270	<1.50   01230271
BL#02	LCS 01	CONC 20.3 %REC 101.5 DUPL OID 01260270 HGA AUTH	4.00 79.8  01260270	4.80 95.0  01260270 HGA AUTH	42.5 85.0  01260270	50.6 101.2  01260270	110 110.0  01230271
BL#03	EXTERNAL QC 01	CONC 15.5 %REC DUPL OID 01260270 HGA AUTH	1.39   01260270	4.48   01260270 HGA AUTH	286   01260270	194   01260270	19600   01230271
NI	Nickel			SE	Selenium		
AG	Silver			ZN	Zinc		
BA	Barium			FE	Iron		

JOB FILE: 90929

DATE: 14 MAR 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 7 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG 1  
COMPLETION DATE: 14 MAR 1

COLUMN.....	13	14	15
ANALYTE.....	31	32	33
MG/KG.....	MG	MN	MO

SAMP # DESCRIPTION

RI

90929	GREEN BAY	CONC	20300	410	0.400	
	1400-1 8/10/00	%REC	94.8	99.8	106.2	
	OVERFLOW	DUPL	20300	413	0.400	
		OID	01230271	01230271	01230270	
90930	GREEN BAY	CONC	19000	433	0.499	
	1505-1 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	01230271	01230271	01230270	
90931	GREEN BAY	CONC	17800	304	0.299	
	1525-1 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	01230271	01230271	01230270	
90932	GREEN BAY	CONC	16100	359	0.400	
	1625-1 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	01230271	01230271	01230270	
90933	GREEN BAY	CONC	17000	372	0.400	
	1715-1 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	01230271	01230271	01230270	
90934	GREEN BAY	CONC	20000	418	0.500	
	1400-2 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	01230271	01230271	01230270	

MG Magnesium  
MO Molybdenum

MN Manganese

JOB FILE: 90929

DATE: 14 MAR 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 8 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG 0  
COMPLETION DATE: 14 MAR 0

COLUMN.....	13	14	15
ANALYTE.....	31	32	33
MG/KG.....	MG	MN	MO

SAMP # DESCRIPTION

RO

90935	GREEN BAY	CONC	18900	386	0.400	
	1505-2 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	01230271	01230271	01230270	
90936	GREEN BAY	CONC	17900	352	0.299	
	1525-2 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	01230271	01230271	01230270	
90937	GREEN BAY	CONC	16100	356	0.398	
	1625-2 8/10/00	%REC	92.0	96.8	103.8	
	OVERFLOW	DUPL	15600	344	0.398	
		OID	01230271	01230271	01230270	
90938	GREEN BAY	CONC	14300	272	0.399	
	1715-2 8/10/00	%REC				
	OVERFLOW	DUPL				
		OID	01230271	01230271	01230270	
90939	GREEN BAY FEED	CONC	18900	376	0.499	
	1400-2 8/10/00	%REC				
		DUPL				
		OID	01230271	01230271	01230270	
90940	GREEN BAY FEED	CONC	16100	270	0.400	
	1505-2 8/10/00	%REC				
		DUPL				
		OID	01230271	01230271	01230270	

MG Magnesium  
MO Molybdenum

MN Manganese

JOB FILE: 90929

DATE: 14 MAR

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 9 OF 9 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG  
COMPLETION DATE: 14 MAR

COLUMN.....	13	14	15
ANALYTE.....	31	32	33
MG/KG.....	MG	MN	MO

SAMP # DESCRIPTION

R

90941	GREEN BAY FEED	CONC	15900	260	0.300
	1525-2 8/10/00	%REC			
		DUPL			
		OID	01230271	01230271	01230270

90942	GREEN BAY FEED	CONC	12400	253	0.299
	1625-2 8/10/00	%REC			
		DUPL			
		OID	01230271	01230271	01230270

90943	GREEN BAY FEED	CONC	12700	228	0.300
	1715-2 8/10/00	%REC			
		DUPL			
		OID	01230271	01230271	01230270

BL#01	METHOD BLANK 01	CONC	<10.0	<0.100	<0.100
		%REC			
		DUPL			
		OID	01230271	01230271	01230270

BL#02	LCS 01	CONC	N/A	20.4	N/A
		%REC		102.0	
		DUPL			
		OID	01230271	01230271	01230270

BL#03	EXTERNAL QC 01	CONC	6670	495	0.498
		%REC			
		DUPL			
		OID	01230271	01230271	01230270

MG Magnesium  
MO Molybdenum

MN Manganese

90944

DATE: 07 SEP

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG  
COMPLETION DATE: 7 SEP

COLUMN.....	1	2	3	4
ANALYTE.....	88	95	100	104
MG/KG.....	TOC	TVS	O&G	TRPH

SAMP # DESCRIPTION

90944	GREEN BAY 1400-1 8/10/00 OVERFLOW	CONC 37100 XREC DUPL 39600 QID 60790249	<4 10150235	240 88.1 55990240	200 85.8 55990242
90945	GREEN BAY 1505-1 8/10/00 OVERFLOW	CONC 50300 XREC DUPL QID 60790249	<4 10150235	310 55990240	230 55990242
90946	GREEN BAY 1525-1 8/10/00 OVERFLOW	CONC 42100 XREC DUPL QID 60790249	<4 10150235	450 55990240	330 55990242
90947	GREEN BAY 1625-1 8/10/00 OVERFLOW	CONC 50500 XREC DUPL QID 60790249	<4 10150235	530 55990240	420 55990242
90948	GREEN BAY 1715-1 8/10/00 OVERFLOW	CONC 39400 XREC DUPL QID 60790249	<4 10150235	570 55990240	450 55990242
90949	GREEN BAY 1400-1 8/10/00 OVERFLOW	CONC 51200 XREC DUPL QID 60790249	<4 10150235	360 55990240	280 55990242

TOC Total Organic Carbon  
O&G Oil and Grease

TVS Total Volatile Solids  
TRPH Total Recoverable Petroleum Hydrocarbons



JOB FILE: 98944

DATE: 07 SEP

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG  
COMPLETION DATE: 7 SEP

COLUMN.....	1	2	3	4
ANALYTE.....	86	95	100	104
MG/KG.....	TOC	TVS	O&G	TRPH

SAMP # DESCRIPTION

90950	GREEN BAY 1505-2 8/10/00 OVERFLOW	CONC 52500 %REC DUPL OID 60790249	<4     10150235	520     55990240	410     55990242
90951	GREEN BAY 1525-2 8/10/00 OVERFLOW	CONC 48600 %REC DUPL OID 60790249	<4     10150235	420     55990240	320     55990242
90952	GREEN BAY 1625-2 8/10/00 OVERFLOW	CONC 46300 %REC DUPL OID 60790249	<4     10150235	590     55990240	460     55990242
90953	GREEN BAY 1715-2 8/10/00 OVERFLOW	CONC 46800 %REC DUPL OID 60790249	<4     10150235	360     55990240	280     55990242
90954	GREEN BAY FEED 1400-2 8/10/00	CONC 43000 %REC DUPL OID 60790249	<4     10150235	340     55990240	260     55990242
90955	GREEN BAY FEED 1505-2 8/10/00	CONC 20400 %REC DUPL OID 60790249	<4     10150235	250     55990240	180     55990242

TOC Total Organic Carbon  
O&G Oil and Grease

TVS Total Volatile Solids  
TRPH Total Recoverable Petroleum Hydrocarbons

JOB FILE: 90944

DATE: 07 SEI

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 21 AUG  
COMPLETION DATE: 7 SEP

COLUMN.....	1	2	3	4
ANALYTE.....	B6	95	100	104
MG/KG.....	TOC	TVS	O&G	TRPH

SAMP # DESCRIPTION

90956	GREEN BAY FEED 1525-2 8/10/00	CONC	22700	<4	460	360
		%REC				
		DUPL				
		OID	60790249	10150235	55990240	55990242
90957	GREEN BAY FEED 1625-2 8/10/00	CONC	20700	<4	360	280
		%REC				
		DUPL				
		OID	60790249	10150235	55990240	55990242
90958	GREEN BAY FEED 1715-2 8/10/00	CONC	27400	<4	330	270
		%REC				
		DUPL		<4		
		OID	60790249	10150235	55990240	55990242
BL#01	METHOD BLANK 01	CONC	<100	<4	<35	<35
		%REC				
		DUPL				
		OID	60790249	10150235	55990240	55990242
BL#02	LCS 01	CONC	11400	N/A	873	879
		%REC	114.0		87.6	88.2
		DUPL				
		OID	60790249	10150235	55990240	55990242
BL#03	EXTERNAL QC 01	CONC	24600	N/A	N/A	N/A
		%REC	109.3			
		DUPL				
		OID	60790249	10150235	55990240	55990242

TOC Total Organic Carbon  
O&G Oil and Grease

TVS Total Volatile Solids  
TRPH Total Recoverable Petroleum Hydrocarbons

## INTERNAL QC DATA

Jobfile Number: 90944  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 21 AUG 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
90944	90944	100	O&G	88.1	93.7	6.2	55990240
90944	90944	104	TRPH	85.8	91.6	6.5	55990242

JOB FILE: 92099

DATE: 18 DEC

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV  
COMPLETION DATE: 18 DEC

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
MG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP #	DESCRIPTION						
92099	GB/METPRO UNDER-1	CONC	<7.96	<7.96	<7.96	1657	<7.96
		%REC					
		DUPL					
		OID	54920341	54920341	54920341	54920341	54920341
92100	GB/METPRO UNDER-2	CONC	<8.18	<8.18	<8.18	1634	<8.18
		%REC					
		DUPL					
		OID	54920341	54920341	54920341	54920341	54920341
92101	GB/METPRO OVER-1	CONC	<8.29	<8.29	<8.29	8812	<8.29
		%REC					
		DUPL					
		OID	54920341	54920341	54920341	54920341	54920341
92102	GB/METPRO OVER-2	CONC	<8.32	<8.32	<8.32	8101	<8.32
		%REC					
		DUPL					
		OID	54920341	54920341	54920341	54920341	54920341
BL#01	METHOD BLANK 01	CONC	<8.3	<8.3	<8.3	<8.3	<8.3
		%REC					
		DUPL					
		OID	54920341	54920341	54920341	54920341	54920341
BL#02	LCS 01	CONC	1.70	N/A	N/A	N/A	N/A
		%REC	102.0				
		DUPL	1.63				
		OID	54920341	54920341	54920341	54920341	54920341

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE: 92099

DATE: 18 DEC

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV  
COMPLETION DATE: 18 DEC

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
MG/KG.....	PCB-1260	Tc(XYL-S	DCLBP

SAMP # DESCRIPTION

92099	GB-METPRO UNDER-1	CONC 94.9 %REC DUPL OID 54920341	72.1%       54920341	80.1%       54920341	     
92100	GB/METPRO UNDER-2	CONC 87.2 %REC DUPL OID 54920341	72.3%       54920341	78.6%       54920341	     
92101	GB/METPRO OVER-1	CONC 526 %REC DUPL OID 54920341	69.4%       54920341	78.8%       54920341	     
92102	GB/METPRO OVER-2	CONC 490 %REC DUPL OID 54920341	66.5%       54920341	73.9%       54920341	     
BL#01	METHOD BLANK 01	CONC <8.3 %REC DUPL OID 54920341	73.0%       54920341	125%       54920341	     
BL#02	LCS 01	CONC 1.62 %REC 97.0 DUPL 1.63 OID 54920341	87.9%   85.8   54920341	78.4%   87.2   54920341	     

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

Tc(XYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

## INTERNAL QC DATA

Jobfile Number: 92099  
Project: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
Account Number: NEED PR&C  
Date Received: 01 NOV 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
92099	BL#02	137	PCB-1016	102.0	97.6	4.4	54920341
92099	BL#02	143	PCB-1260	97.0	98.0	1.0	54920341

JOB FILE: 92103

DATE: 11 DEC (

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV ( )  
COMPLETION DATE: 11 DEC ( )

COLUMN.....	1	2	3
ANALYTE.....	86	100	104
MG/KG.....	TOC	O&G	TRPH

SAMP # DESCRIPTION

92103	GB/METPRO UNDER-1	CONC 14800 %REC DUPL 10400 OID 60040311	210       55990346	120       55990346
92104	GB/METPRO UNDER-2	CONC 8500 %REC DUPL OID 60040311	200       55990346	110       55990346
92105	GB/METPRO OVER-1	CONC 70300 %REC DUPL OID 60040311	630       55990346	390       55990346
92106	GB/METPRO OVER-2	CONC 41000 %REC DUPL OID 60040311	570       55990346	350       55990346
BL#01	METHOD BLANK 01	CONC <100 %REC DUPL OID 60040311	<35       55990346	<35       55990346
BL#02	LCS 01	CONC 11500 %REC 115.0 DUPL OID 60040311	878   88.1   55990346	873   87.6   55990346

TOC Total Organic Carbon  
TRPH Total Recoverable Petroleum Hydrocarbons

O&G Oil and Grease

JOB FILE: 92103

DATE: 11 DEC 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV 1  
COMPLETION DATE: 11 DEC 1

COLUMN.....	1	2	3
ANALYTE.....	86	100	104
MG/KG.....	TOC	O&G	TRPH

SAMP # DESCRIPTION

BL#03	EXTERNAL QC 01	CONC 245	N/A	N/A
		%REC 108.9		
		DUPL		
		QID 60040311	55990346	55990346

TOC Total Organic Carbon  
TRPH Total Recoverable Petroleum Hydrocarbons

O&G Oil and Grease



## INTERNAL QC DATA

Jobfile Number: 92103  
Project: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
Account Number: NEED PR&C  
Date Received: 01 NOV 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
92103	BL#02	100	O&G	88.1	88.6	0.6	55990346
92103	BL#02	104	TRPH	87.6	87.8	0.2	55990346

JOB FILE: 92107

DATE: 18 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV  
COMPLETION DATE: 18 JAN

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP #	DESCRIPTION							
92107	GB/METPRO UNDER-1	CONC	<3.0	0.24 J	13.6	13.4	18.6	0.404
		%REC	101.0	96.4	95.5	99.0	86.0	100.4
		DUPL	0.78 J	0.23 J	13.5	13.9	18.9	0.398
		QID	00001008	00001008	00001008	00001008	00001008	04650327
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
92108	GB/METPRO UNDER-2	CONC	0.69 J	0.20 J	11.9	13.1	18.4	0.390
		%REC						
		DUPL						
		QID	00001008	00001008	00001008	00001008	00001008	04650327
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
92109	GB/METPRO OVER-1	CONC	7.1	2.07	112	120	149	4.98
		%REC						
		DUPL						
		QID	00001008	00001008	00001008	00001008	00001008	04650327
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
92110	GB/METPRO OVER-2	CONC	6.8	1.95	106	116	140	4.34
		%REC						
		DUPL						4.44
		QID	00001008	00001008	00001008	00001008	00001008	04650332
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
BL#01	METHOD BLANK 01	CONC	<3.0	<0.50	<2.0	<2.0	<2.0	<0.040
		%REC						
		DUPL						
		QID	00001008	00001008	00001008	00001008	00001008	04650332
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
BL#02	LCS 01	CONC	9.39	5.15	20.6	20.3	10.5	0.0715
		%REC	93.9	103.0	103.0	101.5	105.0	95.3
		DUPL						
		QID	00001008	00001008	00001008	00001008	00001008	04650332
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
AS	Arsenic							
CR	Chromium							
PB	Lead							
CD	Cadmium							
CU	Copper							
HG	Mercury							

JOB FILE: 92107

DATE: 18 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV  
COMPLETION DATE: 18 JAN

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

BL#03	EXTERNAL QC 01	CONC 79.0	33.6	17.6	94.4	952	0.0646
		%REC					
		DUPL					
		OTD 00001008	00001008	00001008	00001008	00001008	04650332
			HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	

AS Arsenic  
CR Chromium  
PB Lead

CD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 92107

DATE: 18 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLTA  
CHEM. PRESERVATIVE:JOB NUMBER: NEDD PR&C  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 01 NOV  
COMPLETION DATE: 18 JAN

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

SAMP #	DESCRIPTION	CONC	7	8	9	10	11	12
92107	GB/METPRO UNDER-1	CONC 5.4	<4.0	<1.0	32.8	17.8 B	4400	
		XREC 96.0	94.0	62.6	95.8	100.6		
		DUPL 5.4	<4.0	<1.0	34.0	17.7 B	4510	
		OID 00001008	00001008	00001008	00001008	00001008	00001008	
		HGA AUTH		HGA AUTH				
92108	GB/METPRO UNDER-2	CONC 4.5	<4.0	<1.0	31.4	16.3 B	3430	
		XREC						
		DUPL						
		OID 00001008	00001008	00001008	00001008	00001008	00001008	
		HGA AUTH		HGA AUTH				
92109	GB/METPRO OVER-1	CONC 32.2	<4.0	1.4	270	149 B	23200	
		XREC						
		DUPL						
		OID 00001008	00001008	00001008	00001008	00001008	00001008	
		HGA AUTH		HGA AUTH				
92110	GB/METPRO OVER-2	CONC 29.5	0.86 J	1.4	257	141 B	22300	
		XREC						
		DUPL						
		OID 00001008	00001008	00001008	00001008	00001008	00001008	
		HGA AUTH		HGA AUTH				
BL#01	METHOD BLANK 01	CONC <2.0	<4.0	<1.0	<2.0	0.14 J	<24.0	
		XREC						
		DUPL						
		OID 00001008	00001008	00001008	00001008	00001008	00001008	
		HGA AUTH		HGA AUTH				
BL#02	LCS 01	CONC 20.8	4.7	3.42	51.8	51.8 B	110	
		XREC 104.0	94.0	68.4	103.6	103.6	110.0	
		DUPL						
		OID 00001008	00001008	00001008	00001008	00001008	00001008	
		HGA AUTH		HGA AUTH				

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 92107

DATE: 18 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV  
COMPLETION DATE: 18 JAN

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
MG/KG.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

RC

BL#03	EXTERNAL QC 01	CONC	13.8	<4.0	0.59 J	272	172 B	18900
		%REC						
		DUPL						
		OID	00001008	00001008	00001008	00001008	00001008	00001008
		HGA AUTH						

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
FE Iron

JOB FILE: 92107

DATE: 18 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV  
COMPLETION DATE: 18 JAN

COLUMN.....	13	14
ANALYTE.....	32	33
MG/KG.....	MN	MO

SAMP # DESCRIPTION

92107	GB/METPRO UNDER-1	CONC 83.4 %REC 103.0 DUPL 83.3 QID 00001008 HGA AUTH	<2.0         
92108	GB/METPRO UNDER-2	CONC 78.5 %REC DUPL QID 00001008 HGA AUTH	<2.0         
92109	GB/METPRO OVER-1	CONC 251 %REC DUPL QID 00001008 HGA AUTH	1.11 J         
92110	GB/METPRO OVER-2	CONC 243 %REC DUPL QID 00001008 HGA AUTH	1.17 J         
BL#01	METHOD BLANK 01	CONC <0.80 %REC DUPL QID 00001008 HGA AUTH	<2.0         
BL#02	LCS 01	CONC 21.2 %REC 106.0 DUPL QID 00001008 HGA AUTH	N/A         

MN Manganese

MO Molybdenum

JOB FILE: 92107

DATE: 18 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 01 NOV  
COMPLETION DATE: 18 JAN

COLUMN.....	13	14
ANALYTE.....	32	33
MG/KG.....	MN	MO

SAMP # DESCRIPTION

BL#03	EXTERNAL QC 01	CONC	444	<2.0
		%REC		
		DUPL		
		OID	00001008	00001008
		HGA AUTH		

MN Manganese

MO Molybdenum

JOB FILE: 92111

DATE: 12 DEC 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 01 NOV 0  
COMPLETION DATE: 12 DEC 0

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
PPB.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP #	DESCRIPTION							RC
92111	GB/METPRO UNDER 1	CONC	<0.24	<0.24	<0.24	2.65	<0.24	<0.24
		%REC						
		DUPL						
		OID	54920341	54920341	54920341	54900341	54920341	54920341
92112	GB/METPRO OVER 1	CONC	<0.24	<0.24	<0.24	0.43	<0.24	<0.24
		%REC						
		DUPL						
		OID	54920341	54920341	54920341	54900341	54920341	54920341
BL#01	METHOD BLANK 01	CONC	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
		%REC						
		DUPL						
		OID	54920341	54920341	54920341	54920341	54920341	54920341
BL#02	LCS 01	CONC	2.42	N/A	N/A	N/A	N/A	N/A
		%REC	96.8					
		DUPL	2.39					
		OID	54920341	54920341	54920341	54920341	54920341	54920341

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254



JOB FILE: 92111

DATE: 12 DEC 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE:

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 01 NOV 1  
COMPLETION DATE: 12 DEC 1

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
PPB.....	PCB-1260	TcLXYL-S	DCLBP

SAMP # DESCRIPTION

R

92111	GB/METPRO UNDER 1	CONC	0.30	65.3%	56.5%
		%REC			
		DUPL			
		OID	54920341	54920341	54920341

92112	GB/METPRO OVER 1	CONC	<0.24	67.3%	64.0%
		%REC			
		DUPL			
		OID	54920341	54920341	54920341

BL#01	METHOD BLANK 01	CONC	<0.25	77.4%	80.9%
		%REC			
		DUPL			
		OID	54920341	54920341	54920341

BL#02	LCS 01	CONC	2.19	73.0%	79.6%
		%REC	87.6		
		DUPL	2.24	71.2%	84.7%
		OID	54920341	54920341	54920341

PCB-1260 PCB-1260  
DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

TcLXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

## INTERNAL QC DATA

Jobfile Number: 92111  
Project: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
Account Number: NEED PR&C  
Date Received: 01 NOV 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
92111	BL#02	137	PCB-1016	96.8	95.6	1.2	54920341
92111	BL#02	143	PCB-1260	87.6	89.6	2.3	54920341

487 1-29-01

JOB FILE: 92113

DATE: 26 JAN 01

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN-  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: WATERRECEIPT DATE: 01 NOV 01  
COMPLETION DATE: 26 JAN 01

		COLUMN.....	1	2	3	4	5	6
		ANALYTE.....	2	4	5	6	7	8
		PPM.....	AS	CD	CR	CU	PB	HG
SAMP #	DESCRIPTION							
92113	GB/METPRO UNDER	CONC	<0.015	<0.0025	0.014	0.022	0.017	0.00023
		%REC	110.0	102.0	101.0	104.0	103.0	103.6
		DUPL	0.0041 J	<0.0025	0.014	0.021	0.018	0.00031
		OID	00001002	00001002	00001002	00001002	00001002	04650340
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
92114	GB/METPRO OVER	CONC	<0.015	<0.0025	0.005 J	0.0088 J	0.012	<0.00020
		%REC						
		DUPL						
		OID	00001002	00001002	00001002	00001002	00001002	04650340
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
BL#01	METHOD BLANK 01	CONC	<0.015	<0.0025	<0.010	<0.010	<0.010	<0.00020
		%REC						
		DUPL						
		OID	00001002	00001002	00001002	00001002	00001002	04650340
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
BL#02	LCS 01	CONC	1.09	0.538	1.04	1.00	1.07	0.000345
		%REC	109.0	108.0	104.0	100.0	107.0	92.0
		DUPL						
		OID	00001002	00001002	00001002	00001002	00001002	04650340
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
BL#03	EXTERNAL QC 01	CONC	N/A	N/A	N/A	N/A	N/A	0.00043
		%REC						
		DUPL						
		OID	00001002	00001002	00001002	00001002	00001002	04650340
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
AS	Arsenic			CD	Cadmium			
CR	Chromium			CU	Copper			
PB	Lead			HG	Mercury			

JOB FILE: 92113

DATE: 26 JAN 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE: HNO3JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: WATERRECEIPT DATE: 01 NOV 1  
COMPLETION DATE: 26 JAN 1

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	30
PPH.....	NI	SE	AG	ZN	BA	FE

SAMP # DESCRIPTION

R

92113	GB/METPRO UNDER	CONC 0.0044 J %REC 102.0 DUPL 0.0045 J QID 00001002 HGA AUTH	<0.020 105.0 <0.020 00001002	<0.005 105.0 <0.005 00001002 HGA AUTH	0.040 103.0 0.042 00001002	0.0518 104.0 0.0518 00001002	1.15 105.0 1.20 00001002
92114	GB/METPRO OVER	CONC <0.010 %REC DUPL QID 00001002 HGA AUTH	<0.020   00001002	<0.005   00001002 HGA AUTH	0.036   00001002	0.0422   00001002	0.520   00001002
BL#01	METHOD BLANK 01	CONC <0.010 %REC DUPL QID 00001002 HGA AUTH	<0.020   00001002	<0.005   00001002 HGA AUTH	<0.010   00001002	<0.0025   00001002	<0.120   00001002
BL#02	LCS 01	CONC 1.06 %REC 106.0 DUPL QID 00001002 HGA AUTH	1.05 105.0  00001002	0.204 102.0  00001002 HGA AUTH	1.11 111.0  00001002	1.01 101.0  00001002	6.31 105.0  00001002
BL#03	EXTERNAL QC 01	CONC N/A %REC DUPL QID 00001002 HGA AUTH	N/A   00001002	N/A   00001002 HGA AUTH	N/A   00001002	N/A   00001002	N/A   00001002
NI	Nickel			SE	Selenium		
AG	Silver			ZN	Zinc		
BA	Barium			FE	Iron		

JOB FILE: 92113

DATE: 26 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY MOBILE HYDROCYCLONE-ESTES-OLIN  
CHEM. PRESERVATIVE: HNO3

JOB NUMBER: NEED PR&C  
TYPE OF SAMPLE: WATER

RECEIPT DATE: 01 NOV  
COMPLETION DATE: 26 JAN

COLUMN.....	13	14
ANALYTE.....	32	33
PPM.....	MN	MO

SAMP # DESCRIPTION

R

92113	GB/METPRO UNDER	CONC 0.0369 %REC 108.0 DUPL 0.0372 QID 00001002 HGA AUTH	0.010 J       00001002 
92114	GB/METPRO OVER	CONC 0.0199 %REC DUPL QID 00001002 HGA AUTH	0.0033 J       00001002 
BL#01	METHOD BLANK 01	CONC <0.004 %REC DUPL QID 00001002 HGA AUTH	<0.010       00001002 
BL#02	LCS 01	CONC 1.06 %REC 106.0 DUPL QID 00001002 HGA AUTH	N/A       00001002 
BL#03	EXTERNAL QC 01	CONC N/A %REC DUPL QID 00001002 HGA AUTH	N/A       00001002 

MN Manganese

MO Molybdenum

885 7-9-07

JOB FILE: 93019

DATE: 09 FEB

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 20 DEC  
COMPLETION DATE: 9 FEB

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

SAMP #	DESCRIPTION	CONC	0.500	0.050	3.50	3.60	8.10	0.040
93019	SAND 1 CELL 4	%REC	88.0	94.0	96.2	98.2	92.0	99.2
		DUPL	0.500	0.050	3.60	3.70	8.30	<0.040
		OID	01261032	01261032	01261032	01261032	01261032	04651023
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
93020	SAND 2 CELL 4	CONC	0.400	0.030	2.60	16.5	3.10	<0.040
		%REC						
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	04651023
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
93021	SILT/CLAY 1	CONC	5.10	1.41	77.6	76.8	104	3.44
		%REC						
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	04651023
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
93022	SILT/CLAY 2	CONC	5.60	1.30	82.3	73.7	98.4	3.46
		%REC						
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	04651023
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
BL#01	METHOD BLANK 01	CONC	<0.200	<0.020	<0.100	<0.100	<0.100	<0.040
		%REC						
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	04651023
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	
BL#02	LCS 01	CONC	8.70	4.69	18.9	20.0	9.70	0.0699
		%REC	87.2	93.8	94.5	100.0	97.1	93.2
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	04651023
				HGA AUTH	HGA AUTH	HGA AUTH	HGA AUTH	

AS Arsenic  
CR Chromium  
PB Lead

CD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 93019

DATE: 09 FEB 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 20 DEC 1  
COMPLETION DATE: 9 FEB 1

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	2	4	5	6	7	8
MG/KG.....	AS	CD	CR	CU	PB	HG

SAMP # DESCRIPTION

RC

BL#03	EXTERNAL QC 01	CONC	83.5		37.1		17.5		92.0		1180		0.0537	
		%REC												
		DUPL												
		OID	01261032		01261032		01261032		01261032		01261032		04651023	
					HGA AUTH		HGA AUTH		HGA AUTH		HGA AUTH			

AS Arsenic  
CR Chromium  
PB Lead

CD Cadmium  
CU Copper  
HG Mercury

JOB FILE: 93019

DATE: 09 FEB 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 20 DEC 1  
COMPLETION DATE: 09 FEB 1

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	32
HG/KG.....	NI	SE	AG	ZN	BA	MN

SAMP # DESCRIPTION

RI

93019	SAND 1 CELL 4	CONC	1.90	<0.200	0.300	15.2	5.30	47.7
		%REC	95.8	87.2	90.8	87.0	106.6	117.0
		DUPL	1.90	<0.200	0.200	15.5	5.50	48.7
		OID	01261032	01261032	01261032	01261032	01261032	01261032
			HGA AUTH		HGA AUTH			HGA AUTH
93020	SAND 2 CELL 4	CONC	2.50	<0.200	0.500	11.8	3.90	40.8
		%REC						
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	01261032
			HGA AUTH		HGA AUTH			HGA AUTH
93021	SILT/CLAY 1	CONC	26.6	1.20	0.799	3.11	102	325
		%REC						
		DUPL	121	1.1	0.799			325
		OID	01261032	01261032	01261032	01261032	01261032	01261032
			HGA AUTH		HGA AUTH			HGA AUTH
93022	SILT/CLAY 2	CONC	27.6	1.00	1.00	294	107	326
		%REC						
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	01261032
			HGA AUTH		HGA AUTH			HGA AUTH
BL#01	METHOD BLANK 01	CONC	<0.100	<0.200	<0.100	<1.00	<0.100	<0.100
		%REC						
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	01261032
			HGA AUTH		HGA AUTH			HGA AUTH
BL#02	LCS 01	CONC	19.4	4.20	4.50	44.6	44.0	19.2
		%REC	97.0	83.6	90.6	69.2	88.0	96.0
		DUPL						
		OID	01261032	01261032	01261032	01261032	01261032	01261032
			HGA AUTH		HGA AUTH			HGA AUTH

NI Nickel  
AG Silver  
BA Barium

SE Selenium  
ZN Zinc  
MN Manganese



JOB FILE: 93019

DATE: 09 FEB 01

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 4 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 20 DEC 00  
COMPLETION DATE: 9 FEB 01

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	25	32
MG/KG.....	NI	SE	AG	ZN	BA	MN

SAMP #	DESCRIPTION							ROW
BL#03	EXTERNAL QC 01	CONC 14.3	1.40	4.09	329	175	533	7
		XREC						
		DUPL						
		OID 01261032	01261032	01261032	01261032	01261032	01261032	
		HGA AUTH		HGA AUTH			HGA AUTH	

NI	Nickel	SE	Selenium
AG	Silver	ZN	Zinc
BA	Barium	MN	Manganese

151

JOB FILE: 93019

DATE: 09 FEB 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 5 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 20 DEC 0  
COMPLETION DATE: 9 FEB 0

COLUMN..... 13  
ANALYTE..... 33  
MG/KG..... MO

SAMP # DESCRIPTION

RC

93019 SAND 1 CELL 4 CONC <0.100  
%REC 98.4  
DUPL <0.100  
OID 01261032

93020 SAND 2 CELL 4 CONC <0.100  
%REC  
DUPL  
OID 01261032

93021 SILT/CLAY 1 CONC 0.799  
%REC  
DUPL  
OID 01261032

93022 SILT/CLAY 2 CONC 0.899  
%REC  
DUPL  
OID 01261032

BL#01 METHOD BLANK 01 CONC <0.100  
%REC  
DUPL  
OID 01261032

BL#02 LCS 01 CONC 5.00  
%REC 100.2  
DUPL  
OID 01261032

MO Molybdenum

JOB FILE: 93019

DATE: 09 FEB 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 6 OF 6 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 20 DEC 0  
COMPLETION DATE: 9 FEB 0

COLUMN..... 13  
ANALYTE..... 33  
MG/KG..... MO

SAMP # DESCRIPTION

RC

BL#03 EXTERNAL QC 01 CONC 0.698  
%REC  
DUPL  
OID 01261032

MO Molybdenum

1-25-07

JOB FILE: 93023

DATE: 24 JAN 1

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 20 DEC 1  
COMPLETION DATE: 24 JAN 1

COLUMN.....	1	2	3	4	5	6
ANALYTE.....	137	138	139	140	141	142
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254

SAMP #	DESCRIPTION							R
93023	SAND 1 CELL 4	CONC	<10.3	<10.3	<10.3	365	<10.3	<10.3
		%REC	42.8					
		DUPL						
		OID	54821012	54921012	54821012	54821012	54821023	54821012
93024	SAND 2 CELL 4	CONC	<10.3	<10.3	<10.3	523	<10.3	<10.3
		%REC						
		DUPL						
		OID	54821012	54921012	54821012	54821012	54821023	54821012
93025	SILT/CLAY 1	CONC	<38.1	<38.1	<38.1	6052	<38.1	<38.1
		%REC						
		DUPL						
		OID	54821012	54921012	54821012	54821012	54821023	54821012
93026	SILT/CLAY 2	CONC	<39.7	<39.7	<39.7	5803	<39.7	<39.7
		%REC						
		DUPL						
		OID	54821012	54921012	54821012	54821012	54821023	54821012
BL#01	METHOD BLANK 01	CONC	<8.33	<8.33	<8.33	<8.33	<8.33	<8.33
		%REC						
		DUPL						
		OID	54821012	54921012	54821012	54821012	54821023	54821012
BL#02	LCS 01	CONC	0.73	N/A	N/A	N/A	N/A	N/A
		%REC	87.2					
		DUPL						
		OID	54821012	54921012	54821012	54821012	54821023	54821012

PCB-1016 PCB-1016  
PCB-1232 PCB-1232  
PCB-1248 PCB-1248

PCB-1221 PCB-1221  
PCB-1242 PCB-1242  
PCB-1254 PCB-1254

JOB FILE: 93023

DATE: 24 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 20 DEC  
COMPLETION DATE: 24 JAN

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	TcIXYL-S	DCLBP

SAMP # DESCRIPTION

R

93023	SAND 1 CELL 4	CONC 14.1	79.4%	88.8%	
		%REC 103.6	81.4	84.1	
		DUPL			
		OID 54821012	54821012	54821012	

93024	SAND 2 CELL 4	CONC 28.7	83.1%	90.1%	
		%REC			
		DUPL			
		OID 54821012	54821012	54821012	

93025	SILT/CLAY 1	CONC 319	78.3%	89.2%	
		%REC			
		DUPL			
		OID 54821012	54821012	54821012	

93026	SILT/CLAY 2	CONC 316	71.8%	84.9%	
		%REC			
		DUPL			
		OID 54821012	54821012	54821012	

BL#01	METHOD BLANK 01	CONC <8.33	86.2%	73.7%	
		%REC			
		DUPL			
		OID 54821012	54821012	54821012	

BL#02	LCS 01	CONC 0.75	87.0%	74.9%	
		%REC 90.4			
		DUPL			
		OID 54821012	54821012	54821012	

PCB-1260 PCB-1260

TcIXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

## INTERNAL QC DATA

Jobfile Number: 93023  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 20 DEC 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
93023	93023	137	PCB-1016	42.8	60.4	34.1	54821012
93023	93023	143	PCB-1260	103.6	100.4	3.1	54821012
93023	93023	145	TclXYL-S	81.4	88.8	8.7	54821012
93023	93023	146	DCLBP	84.1	87.5	4.0	54821012

JOB FILE: 93027

DATE: 16 JAN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 20 DEC  
COMPLETION DATE: 16 JAN

COLUMN.....	1	2	3
ANALYTE.....	86	100	104
MG/KG.....	TOC	O&G	TRPH

SAMP # DESCRIPTION

93027	SAND 1 CELL 4	CONC	1610	56	19 J
		%REC			
		DUPL	1980		
		OID	60041010	55991014	55991014
93028	SAND 2 CELL 4	CONC	1260	30	2 J
		%REC		87.6	88.8
		DUPL			
		OID	60041010	55991014	55991014
93029	SILT/CLAY 1	CONC	14200	370	200
		%REC			
		DUPL			
		OID	60041010	55991014	55991014
93030	SILT/CLAY 2	CONC	28000	580	340
		%REC			
		DUPL			
		OID	60041010	55991014	55991014
BL#01	METHOD BLANK 01	CONC	<100	<35	<35
		%REC			
		DUPL			
		OID	60041010	55991014	55991014
BL#02	LCS 01	CONC	11500	883	883
		%REC	115.0	88.6	88.6
		DUPL			
		OID	60041010	55991014	55991014

TOC Total Organic Carbon

O&G Oil and Grease

TRPH Total Recoverable Petroleum Hydrocarbons

J43 FILE: 93027

DATE: 16 JA

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 0054PD-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 20 DE  
COMPLETION DATE: 16 JA

COLUMN.....	1	2	3
ANALYTE.....	86	100	104
MG/KG.....	TOC	O&G	TRPH

SAMP # DESCRIPTION

BL#03	EXTERNAL QC 01	CONC 21750	N/A	N/A
		%REC 96.7		
		DUPL		
		OTD 60041010	55991014	55991014

TOC Total Organic Carbon

O&G Oil and Grease

TRPH Total Recoverable Petroleum Hydrocarbons



## INTERNAL QC DATA

Jobfile Number: 93027  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 0054PD-92310183  
Date Received: 20 DEC 00

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
93027	93028	100	O&G	87.6	89.2	1.8	55991014
93027	93028	104	TRPH	88.8	89.0	0.2	55991014

JOB FILE: 94937

DATE: 07 JUN

## \*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 00549D-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 16 MAR  
COMPLETION DATE: 7 JUN

COLUMN..... 1                      2                      3                      4                      5                      6  
 ANALYTE..... 2                      4                      5                      6                      7                      8  
 MG/KG..... AS                      CD                      CR                      CU                      PB                      HG

SAMP # DESCRIPTION

94937	CLAY 1 CELL 4 3/16/01	CONC 6.90 XREC 102.0 DUPL 6.90 OID 01261137	2.29 99.6 2.32 01261137 HGA AUTH	140 79.6 140 01261137 HGA AUTH	118 79.6 118 01261137 HGA AUTH	191 110.0 195 01261137 HGA AUTH	3.30   04651102
94938	CLAY 2 CELL 4 3/16/01	CONC 6.79 XREC DUPL OID 01261137	2.28   01261137 HGA AUTH	128   01261137 HGA AUTH	108   01261137 HGA AUTH	196   01261137 HGA AUTH	2.40   04651102
94939	SILT CELL 4 3/16/01	CONC 2.00 XREC DUPL OID 01261137	0.320   01261137 HGA AUTH	15.1   01261137 HGA AUTH	21.2   01261137 HGA AUTH	242   01261137 HGA AUTH	0.363 109.2 0.371 04651102
BL#01	METHOD BLANK 01	CONC <0.200 XREC DUPL OID 01261137	<0.020   01261137 HGA AUTH	<0.100   01261137 HGA AUTH	<0.100   01261137 HGA AUTH	<0.100   01261137 HGA AUTH	<0.0100   04651102
BL#02	LCS 01	CONC 10.2 XREC 102.0 DUPL OID 01261137	51.4 102.8  01261137 HGA AUTH	19.1 95.5  01261137 HGA AUTH	18.9 94.5  01261137 HGA AUTH	9.60 96.3  01261137 HGA AUTH	0.0992 99.2  04651102
BL#03	EXTERNAL QC 01	CONC 96.3 XREC DUPL OID 01261137	40.2   01261137 HGA AUTH	22.1   01261137 HGA AUTH	101   01261137 HGA AUTH	1090   01261137 HGA AUTH	0.0650 108.3  04651102

AS Arsenic  
 CR Chromium  
 PB Lead

CD Cadmium  
 CU Copper  
 HG Mercury

JOB FILE: 94957

DATE: 07 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENTRECEIPT DATE: 16 MAR  
COMPLETION DATE: 7 JUN

COLUMN.....	7	8	9	10	11	12
ANALYTE.....	9	10	11	13	24	25
MG/KG.....	NI	SE	AG	ZN	AL	BA

SAMP # DESCRIPTION

94937	CLAY 1 CELL 4 3/16/01	CONC 38.7 %REC 87.4 DUPL 38.7 OID 01261137 HGA AUTH	1.30 88.2 1.30 01261137	1.50 98.2 1.60 01261137 HGA AUTH	689 79.4 692 01261137	26500 90.8 26400 01231154	184 110.4 186 01261137
94938	CLAY 2 CELL 4 3/16/01	CONC 35.0 %REC DUPL OID 01261137 HGA AUTH	1.30   01261137	1.60   01261137 HGA AUTH	672   01261137	26400   01231154	182   01261137
94939	SILT CELL 4 3/16/01	CONC 7.00 %REC DUPL OID 01261137 HGA AUTH	0.300   01261137	0.400   01261137 HGA AUTH	320   01261137	1940   01231154	27.5   01261137
BL#01	METHOD BLANK 01	CONC <0.100 %REC DUPL OID 01261137 HGA AUTH	<0.200   01261137	<0.100   01261137 HGA AUTH	1.20   01261137	<2.00   01231154	<0.100   01261137
BL#02	LCS 01	CONC 18.3 %REC 91.5 DUPL OID 01261137 HGA AUTH	4.30 86.8  01261137	4.80 96.0  01261137 HGA AUTH	45.7 91.4  01261137	N/A   01231154	53.4 106.8  01261137
BL#03	EXTERNAL QC 01	CONC 16.4 %REC DUPL OID 01261137 HGA AUTH	1.60   01261137	4.79   01261137 HGA AUTH	331   01261137	33000   01231154	216   01261137

NI Nickel  
AG Silver  
AL Aluminum

SE Selenium  
ZN Zinc  
BA Barium

JOB FILE: 94937

DATE: 07 JUN

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 3 OF 3 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 16 MAR  
COMPLETION DATE: 7 JUN

COLUMN.....	13	14	15
ANALYTE.....	30	32	33
MG/KG.....	FE	MN	MO

SAMP # DESCRIPTION

94937	CLAY 1 CELL 4 3/16/01	CONC	30700	330	1.00
		%REC	93.6	90.6	114.8
		DUPL	30400	335	1.00
		OID	01231154	01261137	01261137
				HGA AUTH	
94938	CLAY 2 CELL 4 3/16/01	CONC	30500	312	1.00
		%REC			
		DUPL			
		OID	01231154	01261137	01261137
				HGA AUTH	
94939	SILT CELL 4 3/16/01	CONC	10500	174	0.500
		%REC			
		DUPL			
		OID	01231154	01261137	01261137
				HGA AUTH	
BL#01	METHOD BLANK 01	CONC	<2.00	<0.100	<0.100
		%REC			
		DUPL			
		OID	01231154	01261137	01261137
				HGA AUTH	
BL#02	LCS 01	CONC	112	18.7	N/A
		%REC	112.0	93.5	
		DUPL			
		OID	01231154	01261137	01261137
				HGA AUTH	
BL#03	EXTERNAL QC 01	CONC	42100	503	0.999
		%REC			
		DUPL			
		OID	01231154	01261137	01261137
				HGA AUTH	

FE Iron  
MO Molybdenum

MN Manganese

JOB FILE: 94940

DATE: 25 APR 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 00549D-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 16 MAR 0  
COMPLETION DATE: 25 APR 0

COLUMN.....	1	2	3	4	5	6	
ANALYTE.....	137	138	139	140	141	142	
UG/KG.....	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	
SAMP #	DESCRIPTION						RO
94940	CLAY 1 CELL 4	CONC <40.5	<40.5	<40.5	6860	<40.5	<40.5
	3/16/01	%REC					
		DUPL					
		OID 54831099	54831099	54831099	54831099	54831099	54831099
94941	CLAY 2 CELL 4	CONC <40.5	<40.5	<40.5	8330	<40.5	<40.5
	3/16/01	%REC					
		DUPL					
		OID 54831099	54831099	54831099	54831099	54831099	54831099
94942	SILT CELL 4	CONC <11.2	<11.2	<11.2	1950	<11.2	<11.2
	3/16/01	%REC					
		DUPL					
		OID 54831099	54831099	54831099	54831099	54831099	54831099
BL#01	METHOD BLANK 01	CONC <8.3	<8.3	<8.3	<8.3	<8.3	<8.3
		%REC					
		DUPL					
		OID 54831099	54831099	54831099	54831099	54831099	54831099
BL#02	LCS 01	CONC 77.7	N/A	N/A	N/A	N/A	N/A
		%REC 93.2					
		DUPL 86.0					
		OID 54831099	54831099	54831099	54831099	54831099	54831099
PCB-1016	PCB-1016		PCB-1221	PCB-1221			
PCB-1232	PCB-1232		PCB-1242	PCB-1242			
PCB-1248	PCB-1248		PCB-1254	PCB-1254			

JOB FILE: 94940

DATE: 25 APR 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 2 OF 2 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 00549D-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 16 MAR 0  
COMPLETION DATE: 25 APR 0

COLUMN.....	7	8	9
ANALYTE.....	143	145	146
UG/KG.....	PCB-1260	TcIXYL-S	DCLBP

SAMP # DESCRIPTION

RO

94940	CLAY 1 CELL 4 3/16/01	CONC 240 %REC DUPL QID 54831099	114%     54831099	130%     54831099
94941	CLAY 2 CELL 4 3/16/01	CONC 236 %REC DUPL QID 54831099	116%     54831099	115%     54831099
94942	SILT CELL 4 3/16/01	CONC 18.2 %REC DUPL QID 54831099	95.2%     54831099	117%     54831099
BL#01	METHOD BLANK 01	CONC <8.3 %REC DUPL QID 54831099	109%     54831099	127%     54831099
BL#02	LCS 01	CONC 75.3 %REC 90.4 DUPL 81.3 QID 54831099	99.1% 104   54831099	114% 113   54831099

PCB-1260 PCB-1260

DCLBP Decachlorobiphenyl(Surrogate (40-140 WS))

TcIXYL-S 2,4,5,6-Tetrachloro-m-xylene(Surrogate(40-140 WS

## INTERNAL QC DATA

Jobfile Number: 94940  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 00549D-92310183  
Date Received: 16 MAR 01

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
94940	BL#02	137	PCB-1016	93.2	103.2	10.2	54831099
94940	BL#02	143	PCB-1260	90.4	97.6	7.7	54831099

JOB FILE: 94943

DATE: 30 APR 0

\*\*\*\*\* ENVIRONMENTAL CHEMISTRY BRANCH - DATA REPORTING SHEET ( PAGE 1 OF 1 ) \*\*\*\*\*

JOB DESCRIPTION: GREEN BAY - OLIN-ESTES  
CHEM. PRESERVATIVE:

JOB NUMBER: 005490-92310183  
TYPE OF SAMPLE: SEDIMENT

RECEIPT DATE: 16 MAR 0  
COMPLETION DATE: 30 APR 0

COLUMN.....	1	2	3	4
ANALYTE.....	86	100	104	900
MG/KG.....	TOC	O&G	TRPH	O&G-RR

SAMP # DESCRIPTION

RC

94943	CLAY 1 CELL 4 3/16/01	CONC 81000 %REC DUPL 82500 OID 60041117	540 55991107	230 55991110	#1 390 55991110
94944	CLAY 2 CELL 4 3/16/01	CONC 76800 %REC DUPL OID 60041117	460 55991107	130 55991110	#1 250 55991110
94945	SILT CELL 4 3/16/01	CONC 9180 %REC DUPL OID 60041117	200 55991107	46 55991110	#1 110 55991110
BL#01	METHOD BLANK 01	CONC <100 %REC DUPL OID 60041117	<35 55991107	<35 55991110	#1 <35 55991110
BL#02	LCS 01	CONC 11200 %REC 112.0 DUPL OID 60041117	910 88.9 55991107	927 90.5 55991110	#1 921 89.9 55991110
BL#03	EXTERNAL QC 01	CONC N/A %REC DUPL OID 60041117	N/A 55991107	N/A 55991110	N/A 55991110

TOC	Total Organic Carbon	O&G	Oil and Grease
TRPH	Total Recoverable Petroleum Hydrocarbons	O&G-RR	Oil & Grease (Repeat)

FOOTNOTES:

#1 Repeat value, extracts 4/18/01 - See Corrective Action Form.



## INTERNAL QC DATA

Jobfile Number: 94943  
Project: GREEN BAY - OLIN-ESTES  
Account Number: 00549D-92310183  
Date Received: 16 MAR 01

Job#	Sample	Tst	Analyte	% REC	% SDUPL	RPD	OID
94943	BL#02	104	TRPH	90.5	87.4	3.5	55991110

Job Description: Green Bay - Olin-Estes

Job File Number: 94943

### ECB Quality Assurance Corrective Action Form

Analysis: O&G, TRPH

Date: 23-April-01

Analyst: Harrison

Instrument: FTIR

Problem: **Samples extracted 3/30/01, O&G data OK but TRPH data showed contamination in blank and in samples. TRPH numbers higher than O&G numbers. Contamination probably from silica gel.**

Sample Number(s) Affected: 94943-94945

Recommended Corrective Action: Pre-clean silica gel and re-extract samples

Corrective Action Taken By Analyst: **Samples re-extracted 4/18 which was 33 days from sample receipt on 3/16. Silica gel pre-cleaned.**

Comments: **No contamination with re-extraction. However, O&G values from 4/18 extraction lower than original values. Possibly some analyte loss due to length of time between extractions. Both original and repeat O&G data reported. Repeat TRPH data ONLY is reported.**

Date Corrective Action Taken: 18-April-01

Reviewed by: 

22-February 96

c:\cia\caform.xls

<b>REPORT DOCUMENTATION PAGE</b>				<i>Form Approved</i> <b>OMB No. 0704-0188</b>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. <b>PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</b>					
<b>1. REPORT DATE (DD-MM-YYYY)</b> October 2002		<b>2. REPORT TYPE</b> Final report		<b>3. DATES COVERED (From - To)</b>	
<b>4. TITLE AND SUBTITLE</b>  Soil Separation Mobile Treatment Plant Demonstration, Bayport Confined Disposal Facility, Green Bay, Wisconsin				<b>5a. CONTRACT NUMBER</b>	
				<b>5b. GRANT NUMBER</b>	
				<b>5c. PROGRAM ELEMENT NUMBER</b>	
<b>6. AUTHOR(S)</b>  Trudy J. Olin-Estes, Susan E. Bailey, David W. Bowman, Dennis L. Brandon				<b>5d. PROJECT NUMBER</b>	
				<b>5e. TASK NUMBER</b>	
				<b>5f. WORK UNIT NUMBER</b> 0054PD	
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<b>12. DISTRIBUTION / AVAILABILITY STATEMENT</b>  Approved for public release; distribution is unlimited.					
<b>13. SUPPLEMENTARY NOTES</b>					
<b>14. ABSTRACT</b> A mobile, self-contained, maximum density separator (MDS) was tested in a 1-day demonstration conducted at the Bayport Confined Disposal Facility in Green Bay, WI. The objective of the demonstration was to evaluate the ability of the equipment to separate a sand fraction meeting a given specification with respect to fines content and PCBs concentration. Additionally, two different methods of excavating and preparing the material for processing with the MDS were tested. One phase of an ongoing effort in evaluating the feasibility of soil washing techniques for volume reduction of dredged material, the field demonstration was preceded by bench-scale fractionation studies. These studies were conducted to determine the magnitude and distribution of contaminants in the material to be processed, and expected contaminant levels in the product streams. The demonstration was the culmination of research into the implementation and interpretation of fractionation studies; type, availability, and suitability of off-the-shelf equipment for sediment processing; and site visits to view different physical separation plant configurations. The results of these cumulative efforts will ultimately be incorporated into summary guidance documents.					
<b>15. SUBJECT TERMS</b>		Hydrocyclone Maximum density separator MDS		PCBs Sediments Soil separation Soil washing Volume reduction	
<b>16. SECURITY CLASSIFICATION OF:</b>			<b>17. LIMITATION OF ABSTRACT</b>	<b>18. NUMBER OF PAGES</b>  229	<b>19a. NAME OF RESPONSIBLE PERSON</b>
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